

JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)
Narsampet, Warangal-506 332

LIST OF OPEN ELECTIVES (COLLEGE LEVEL)

Department of ECE			
Sr.No.	Subject code	Name of the Open Elective Subject	Preferable Semester
1.	AJ5418	Electronic Measurements and Instrumentation	V
2.	AJ5416	Computer Organization	V
3.	AJ5417	IC Applications	V
4.	AJ6446	Instrumentation	VI
5.	AJ6447	Electromagnetic Theory	VI
6.	AJ6448	Image and Video Processing	VI
7.	AJ7449	Bio-medical Instrumentation	VII
8.	AJ7424	Digital Signal Processing	VII
9.	AJ7440	Wireless Sensor Networks	VII
Department of EEE			
10.	AJ5212	Electrical Technology	V
11.	AJ5220	Renewable Energy Sources	V/VI
12.	AJ5221	Energy Storage Systems	V/VI
13.	AJ5222	Electrical Engineering Materials	V/VI
14.	AJ6240	Neural Networks & Fuzzy Logic	VI/VII
Department of CSE			
15.	AJ5511	Data Base Management Systems	V/VI
16.	AJ5521	Computer Networks	V/VI
17.	AJ6529	Network Security	VI/VII
18.	AJ6530	Cloud Computing and IoT	VI/VII
19.	AJ6531	Natural Language Processing	VI/VII
20.	AJ6532	Artificial Intelligence and Robotics	VI/VII
21.	AJ7553	Big-Data Management	VII
Department of ME			
22.	AJ5360	Material Science	V
23.	AJ6365	Strength of Materials	VI
24.	AJ5361	Thermal Sciences	V
25.	AJ5362	Engineering Mechanics	V
26.	AJ7366	Finite Element Analysis	VII
27.	AJ7363	Optimization Techniques and Its Applications	VII
28.	AJ6364	Project Planning and Management	VI
Department of CE			
29.	AJ5129	Disaster Management and Mitigation	V/VI
30.	AJ5130	Environmental Impact Assessment	V/VI
31.	AJ5131	Basics of Civil Engineering	V/VI

32.	AJ6132	Quantity Surveying and Costing	VI
33.	AJ7133	Construction Project Management	VII
		Department of MBA	
34.	AJ_E01	Management Science	V/VII
35.	AJ_E02	Managerial Economics and Financial Analysis	V/VI
36.	AJ_E03	Total Quality Management	V/VI
37.	AJ_E04	Global Marketing	VI/VII
38.	AJ_E05	Green Marketing	VI/VII
39.	AJ_E06	Intellectual Property Rights	V/VI
40.	AJ_E07	Supply Chain Management	V/VI
41.	AJ_E08	Statistical Quality Control	VI/VII
42.	AJ_E09	Financial Statement Analysis and Reporting	V/VI
43.	AJ_E10	Micro, Small and Medium Enterprises Management	V/VI
Note: ‘ ’ represents the subject code with semester of the respective B.Tech branch			

**JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)**

B.Tech III-YEAR I-Sem

**L T P C
3 0 0 3**

(AJ5418) ELECTRONIC MEASUREMENTS AND INSTRUMENTATION

COURSE OBJECTIVES:

1. To understand the basic functional elements of instrumentation
2. Understanding the signal generators and wave analyzers
3. To understand various storage and display devices
4. To introduce various transducers and the data acquisition systems
5. To use the different bridges measuring techniques and the measurement of different physical parameters

UNIT-I

Basic Measurement Concepts:

Functional Elements of Measuring System, Performance Characteristics-static & dynamic, Errors in Measurements, Statistical Analysis, PMMC, DC Voltmeters, DC Ammeters, DMM, Ohmmeter, True RMS Responding Voltmeter, Meter Protection, DVMS-Successive Approximation, Linear Ramp, Dual Slope

UNIT-II

Signal Generators and Analyzers:

AF and RF Generators, Function Generator, Pulse and Square Wave Generators, Sweep Frequency Generator

AF and HF Wave Analyzers, Harmonic Distortion Analyzer, Heterodyne Wave Analyzers, Spectrum Analyzer

UNIT -III:

Oscilloscopes: CRO, CRT, Time Base Circuits, Delay Line, Lissajous Figures, CRO Probes, Dual Trace CRO, Dual Beam CRO, Sampling Oscilloscope, Storage Oscilloscope-Analog & Digital, Applications of Oscilloscopes

UNIT –IV:

Transducers: Classification, Resistive, Capacitive, Inductive, Piezoelectric, Photoelectric RTD, Thermocouples, Hotwire Anemometer, LVDT, Synchros, Data Acquisition Systems, Interfacing Transducers

UNIT –V:

Bridges: Wheatstone, Kelvin, Maxwell, Hay, Anderson, Schering

Measurement of Non Electrical Quantities: Force, Velocity, Displacement, Humidity, Moisture, Liquid Level

TEXT BOOKS:

1. H.S. Kalsi, 'Electronic Instrumentation', Tata McGraw Hill, 1995.
2. Modern Electronic Instrumentation and Measurement Techniques: A.D. Helbins, W.D. Cooper: PHI 5th Edition 2003

REFERENCE BOOKS:

1. D.V.S. Moorthy, 'Transducers and Instrumentation', Prentice Hall of India Pvt Ltd,
2. David A. Bell, Electronic Instrumentation and measurements, Prentice Hall of India
3. Industrial Instrumentation: T.R. Padmanabham Springer 2009
4. A.K. Sawhney, 'A Course in Electrical & Electronic Measurements & Instrumentation', Dhanpat Rai and Co, 2004.

Course Outcomes:

Upon a successful completion of this course, the student will be able to.

- Describe the fundamental concepts and principles of instrumentation.
- Explain the operations of the various instruments required in measurements.
- Apply the measurement techniques for different types of tests.
- To select specific instrument for specific measurement function.
- Learners will apply knowledge of different oscilloscopes like CRO, DSO.
- Students will understand functions, specification, and applications of signal analyzing instruments.

**JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)**

B.Tech III-YEAR I-Sem

**L T P C
3 0 0 3**

(AJ5416) COMPUTER ORGANIZATION

Objectives:

- To understand basic components of computers.
- To explore the I/O organizations in depth.
- To explore the memory organization.

UNIT I:

BASIC STRUCTURE OF COMPUTERS: Computer Types, Functional units, Basic operational concepts, Bus Structures, Software, Performance, Multiprocessors and multi computers.

Instruction Codes, Computer Registers, Computer instructions, Instruction cycle, Instruction formats, Addressing Modes, STACK organization.

UNIT II:

PROGRAM CONTROL: Status Bit Conditions, Conditional Branch Instructions, Program Interrupts: Types Of Interrupts.

MICROPROGRAMMED CONTROL: Control memory, Address sequencing, micro program example, design of control unit, hard wired control, Micro programmed control.

UNIT III:

MEMORY ORGANIZATIONS: Memory hierarchy, Main Memory, RAM, ROM Chips, Memory Address Map, Memory Connection to CPU, Associate memory, Cache Memory, Virtual memory, RAID.

UNIT-IV:

INPUT-OUTPUT ORGANIZATION : Peripheral Devices, Input Output Interface, Asynchronous data transfer, Modes of Transfer, Priority Interrupt, Direct memory Access, Input –Output Processor (IOP), Serial communication,

UNIT V:

PIPELINE AND VECTOR PROCESSING: Parallel Processing, Pipelining, Arithmetic Pipeline, Instruction Pipeline, RISC Pipeline, Vector Processing, Array Processors.

TEXT BOOKS:

- 1 Computer Organization – Carl Hamacher, Zvonks Vranesic, SafeaZaky, Vth Edition, McGraw Hill.
- 2 Computer Systems Architecture – M.Moris Mano, IIIrd Edition, Pearson/PHI.

REFERENCES:

1. Computer Organization and Architecture – William Stallings Sixth Edition, Pearson/PHI
2. Structured Computer Organization – Andrew S. Tanenbaum, 4th Edition, PHI/Pearson.

3. Fundamentals of Computer Organization and Design, - Sivaraama Dandamudi, Springer Int. Edition.
4. Computer Architecture a quantitative approach, John L. Hennessy and David A. Patterson, Fourth Edition, Elsevier
5. Computer Architecture: Fundamentals and principles of Computer Design, Joseph D. Dumas II, BS Publication.

Course outcomes:

- CO1: Ability to model, understands, and develops complex software for system software as well as application software
- CO2: The broad education necessary to understand the impact of computer science and engineering solutions in the scientific, societal and human contexts
- CO3: Knowledge of contemporary issues be able to manipulate numeric information in different forms, e.g., different bases, signed integers, various codes such as ASCII, Gray, and BCD.
- CO4: Be able to manipulate simple Boolean expressions using the theorems and postulates of Boolean algebra and to minimize combinational functions.
- CO5: Be able to design and analyze combinational circuits and to use standard combinational functions/building block to build more complex circuits.
- CO6: Be able to learn the internal organization of popular 8086 microprocessors

Learning outcomes:

1. Understand the basic components of a computer, including CPU, memories, and input/output, and their organization, Ability to use memory and I/O devices effectively.
2. Understand the cost performance tradeoff in designing memory hierarchy and instruction sets, able to explore the hardware requirements for cache memory and virtual memory.

**JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)**

B.Tech III-YEAR I-Sem

**L T P C
3 0 0 3**

(AJ5417) IC Applications

Course Objectives:

The main objectives of the course are:

- To Study the basic building blocks of Linear integrated circuits.
- To Study the applications of Operational amplifiers.
- To Study the Timers and Phase Locked Loops.
- To Study the theory of ADC and DAC.
- To understand the working of basic digital Integrated Circuits.

UNIT I:

INTEGRATED CIRCUITS: Introduction, Classification of Integrated Circuits, Fabrication Techniques of ICs

INTRODUCTION TO OP-AMP: Introduction, Internal blocks of Op-Amp, Ideal and Practical Op-Amp, Op-amp characteristics-DC and AC Characteristics.741 Op-Amp and its Features, Modes of operation- inverting, non-inverting.

UNIT II:

APPLICATIONS OF OP-AMPS:

Basic Applications- Instrumentation Amplifier, AC Amplifier, V to I and I to V Converters, Sample & Hold Circuits, Differentiators and Integrators.

Comparators and waveform Generators- Comparators, Regenerative (Schmitt Trigger) Multivibrators (Monostable and Astable), Introduction to Voltage Regulators Features of 723 Regulators.

UNIT III:

ACTIVE FILTERS

Introduction,First Order Low Pass, High Pass and Band Pass Filters, Active Band Reject and All Pass Filters.

TIMERS & PHASE LOCKED LOOPS

Introduction to 555 Timer, Functional Diagram, Monostable and Astable Operations and Applications, Schmitt Trigger, PLL- Introduction, Block Schematic, Principles and Description of individual Blocks of 565, VCO.

UNIT IV:

D-A AND A- D CONVERTERS

Introduction, Basic DAC Techniques- Weighted Resistor Type. R-2R Ladder Type, inverted R-2R Type and IC 1408 DAC.

Different types of ADCs - Parallel Comparator Type, Counter Type, Successive Approximation Register Type and Dual Slope Type DAC and ADC Specifications.

UNIT-V:

Digital ICs: Classifications, Standard TTL NAND Gate-Analysis & Characteristics, TTL Open Collector Outputs. Tristate TTL, MOS & CMOS open drain and tristate outputs.

Comparison of Various Logic Families. IC interfacing- TTL driving CMOS & CMOS driving TTL.

TEXT BOOKS:

1. Linear Integrated Circuits -D. Roy Chowdhury, New Age International (p)Ltd.
2. Op-Amps & Linear ICs - Ramakanth A. Gayakwad.

REFERENCE BOOKS:

1. Op-Amps and Linear Integrated Circuits, R.F. Coughlin & Fredrick F. Driscoll, PHI.
 2. Operational Amplifiers and Liner Integrated Circuits: theory & applications, Denton J. Daibey, TMH
 3. Design with operational amplifiers &Analog Integrated Circuits, Serigo Franco. McGraw Hill.
4. Digital Fundamentals - Floyd and Jain, Pearson Education.

Course Outcomes:

After completion of this course, students will have....

- A thorough understanding of Operational amplifiers with Linear Integrated Circuits.
- Understanding of the Different families of Digital Integrated Circuits and their characteristics.
- Also student will able to design circuits using Operational amplifiers for various applications.

**JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)**

B.Tech III-YEAR II-Sem

**L T P C
3 0 0 3**

(AJ6446) INSTRUMENTATION

Objective

Electrical measurements course introduces the basic principles of all measuring instruments. It also deals with the measurement of RLC parameters voltage, current Power factor, power, energy and magnetic measurements.

UNIT-I

Introduction to Measuring Instruments : Classification —deflecting, control and damping torques — Ammeters and Voltmeters — PMMC, moving iron type instruments — expression for the deflecting torque and control torque — Errors and compensations, extension of range using shunts and series resistance. Electrostatic Voltmeters-electrometer type and attracted disc type — Extension of range of E.S. Voltmeters.

UNIT — II:

Potentiometers & Instrument Transformers: Principle and operation of D.C. Crompton's potentiometer—standardisation — Measurement of unknown resistance, current, voltage. A.C. Potentiometers: polar and coordinate types standardisation — applications. CT and PT — Ratio and phase angle errors.

UNIT —III:

Measurement of Power & Energy: Single phase dynamo meter watt meter, LPF and UPF, Double element and three element dynamo meter watt meter, expression for deflecting and control torques — Extension of range of watt meter using instrument transformers — Measurement of active and reactive powers in balanced and unbalanced systems. Single phase induction type energy meter — driving and braking torques — errors and compensations — testing by phantom loading using R.S.S. meter. Three phase energy meter — tri-vector meter, maximum demand meters.

UNIT — IV

D.0 & A.0 Bridges: Method of measuring low, medium and high resistance — sensitivity of wheat-stone's bridge — Carey foster's bridge, kelvin's double bridge for measuring low resistance, measurement of high resistance — loss of charge method.Measurement of

inductance- Factor – Maxwell’s bridge, Hay’s bridge, Anderson’s bridge, Owen’s bridge. Measurement of capacitance and loss angle – Desauty Bridge. Wien’s bridge — Schering Bridge.

UNIT-V

Transducers & Oscilloscopes: Definition of transducers, Classification of transducers, Advantages of Electrical transducers, Characteristics and choice of transducers; Principle operation of LVDT and capacitor transducers; LVDT Applications, Strain gauge and its principle of operation, gauge factor, Thermistors, Thermo couples, Piezo electric transducers, photovoltaic, photo conductive cells, photo diodes.

CRO: Cathode ray oscilloscope-Cathode ray tube-time base generator- horizontal and vertical amplifiers-CRO probes-applications of CRO- Measurement of phase and frequency-lissajous patterns.

TEXT BOOKS

- Electrical and Electronic Measurements and Instrumentation, R. K. Rajput, S. Chand & Company Ltd.
- Electrical Measuring Instruments and Measurements, S. C. Bhargava, BS Publications.

REFERENCE BOOKS

- Electrical & Electronic Measurement & Instruments, A.K.Sawhney Dhanpat Rai & Co. Publications.
- Electrical and Electronic Measurements, G. K. Banerjee, PHI Learning Pvt. Ltd.
- Electrical Measurements and Measuring Instruments, Golding and Widdis, Reem Publications.
- Electrical Measurements, Buckingham and Price, Prentice — Hall
- Electrical Measurements: Fundamentals, Concepts, Applications,
- Reissland, M.U, New Age International (P) Limited, Publishers.
- Electrical Measurements and measuring Instruments, E.W. Golding and F.C. Widdis, fifth Edition, Wheeler Publishing.

Outcome

After going through this course the student gets a thorough knowledge on, different types of measuring instruments their construction operation and characteristics, resistance voltage current measurements through potentiometer meters, voltage current measurements through instrument transformers, power and energy measurements through watt and energy meters, resistance measurements through DC bridges, capacitance and inductance measurements through AC bridges, operation of different types of transducers, measurement of phase and frequency through CRO, range extension of measuring instruments and different types of errors & their reduction methods in measuring instruments, with which he/she can able to apply the above conceptual things to real-world electrical and electronics problems and applications.

**JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)**

B.Tech III-YEAR II-Sem

**L T P C
3 0 0 3**

(AJ6447) ELECTROMAGNETIC THEORY

Course Objectives:

- The objective of this course is to introduce the concepts of electric field and magnetic fields and their applications
- Utilized in the development of the theory for power transmission lines and electrical machines.
- The behavior of conductors and dielectrics, their boundary conditions, Maxwell's equations with respect to electrostatics and magnetostatics.
- The phenomena of energy stored and energy density in electrostatics and magnetostatics, the concepts of conduction, convection and displacement current density, their equations.
- The phenomena of calculation of average power, power density

UNIT-I: Electrostatics

Types of Co-ordinate systems: Rectangular, Cylindrical, Spherical system. Electrostatic Fields – Coulomb's Law–Electric Field Intensity (EFI)–EFI due to a line and a surface charge–Work done in moving a point charge in an electrostatic field–Electric Potential–Properties of potential function–Potential gradient–Gauss's law–Application of Gauss's Law–Maxwell's first law, $\text{div}(\mathbf{D})=\rho_v$ –Laplace's and Poisson's equations–Solution of Laplace's equation in one variable. Electric dipole–Dipole moment–potential and EFI due to an electric dipole–Torque on an Electric dipole in an electric field

UNIT-II: Dielectrics & Capacitance:

Behavior of conductors in an electric field—Conductors and Insulators –Electric field inside a dielectric material,polarization,Conductor and Dielectric boundary conditions Capacitance,Capacitance of parallel plates, spherical and co-axial capacitors,with composite dielectrics,Energy stored and energy density in a static electric field,Current density,conduction and Convection current densities ,Ohm’s law in point form Equation of continuity.

UNIT-III: Magneto Statics:

Static magnetic fields,Biot-Savart’s law,Magnetic field Intensity(MFI),MFI due to a straight current carrying filament,MFI due to circular, square and solenoid current carrying wire,Relation between magnetic flux, magnetic flux density and MFI ,Maxwell’s second Equation, $\text{div}(\mathbf{B})=0$,

Ampere’s Law & Applications: Ampere’s circuital law and its applications viz. MFI due to an infinite sheet of current and a long current carrying filament –Point form of Ampere’s circuital law,Maxwell’s third equation, $\text{Curl}(\mathbf{H})=\mathbf{J}_c$

UNIT-IV: Force in Magnetic fields and Magnetic Potential:

Magnetic force -Moving charges in a Magnetic field–Lorentz force equation–force on a current element in a magnetic field–Force on a straight and a long current carrying conductor in a magnetic field–Force between two straight long and parallel current carrying conductors–Magnetic dipole and dipole moment—a differential current loop as a magnetic-Scalar magnetic potential and its limitations–vector magnetic potential and its properties–vector Poisson’s equations-Self and Mutual inductance–Neumann’s formulae–determination of self-inductance of a solenoid and torrid-mutual inductance between a straight long wire and a square loop wire in the same plane–energy stored and density in a magnetic field. Introduction to permanent magnets, their characteristics and applications.

UNIT-V Time Varying Fields

Time varying fields–Faraday’s laws of electromagnetic induction–Its integral and point forms–Maxwell’s fourth equation, $\text{Curl}(\mathbf{E})=-\partial\mathbf{B}/\partial t$ –Statically and Dynamically induced EMFs–Simple problems-Modification of Maxwell’s equations for time varying fields Displacement current and Displacement current density–Power in EM Fields–Poynting Vector and Poynting Theorem.

Text Books:

- 1.“Engineering Electromagnetic” by William H. Hayt & John. A. Buck, Mc. Graw-Hill Companies, 7th Edition.2009.
- 2.“Electromagnetic Fields” by Matthew.N.O.Sadiku, Oxford Publications Course

References :

1. Electromagnetics with applications: Kraus and Fleisch, McGraw Hill 1999

Course Outcomes:

After completion of this course the student will have the knowledge regarding-

- The relation between the electric field and the magnetic field, about the various laws governing the concepts of these fields.
- The behavior of conductors and dielectrics, their boundary conditions, Maxwell’s equations with respect to electrostatics and magnetostatics

- The concepts related to time varying fields, about scalar and vector magnetic potential, self and mutual inductance
- The phenomena of energy stored and energy density in electrostatics and magnetostatics, the concepts of conduction, convection and displacement current density, their equations.

JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES (AUTONOMOUS)

IV Year B.Tech ECE I-sem

**L T P C
3 0 0 3**

IMAGE AND VIDEO PROCESSING (Open Elective)

Course objectives:

This course will develop the knowledge in / on

- Basic steps of image processing, pixels and image segmentation concepts.
- Image enhancement methods such as spatial and frequency domain enhancement.
- Image compression fundamentals and compression models.
- Basic steps of video processing and 3-D motion models.
- 2-D motion estimation and coding techniques.

UNIT –I:

Fundamentals of Image Processing and Image Transforms:

Basic steps of Image Processing System Sampling and Quantization of an image, Basic relationship between pixels.

Image Segmentation:

Segmentation concepts, Point, Line and Edge Detection, Thresholding, Region based segmentation.

UNIT –II:

Image Enhancement:

Spatial domain methods: Histogram processing, Fundamentals of Spatial filtering, Smoothing spatial filters, Sharpening spatial filters.

Frequency domain methods: Basics of filtering in frequency domain, image smoothing, image sharpening, Selective filtering.

UNIT –III:

Image Compression: Image compression fundamentals -Coding Redundancy, Spatial and Temporal redundancy

Compression models: Lossy & Lossless, Huffman coding, , Bit plane coding, Transform coding, Predictive coding, Wavelet coding, Lossy Predictive coding, JPEG Standards.

UNIT -IV:

Basic Steps of Video Processing:

Analog Video, Digital Video. Time-Varying Image Formation models: Three-Dimensional Motion

Models, Geometric Image Formation,

Photometric Image Formation, Sampling of Video signals, Filtering operations.

UNIT –V:

2-D Motion Estimation:

Optical flow, General Methodologies, Pixel Based Motion Estimation, Block-Matching Algorithm, and Mesh based Motion Estimation, Global Motion Estimation; Region based Motion Estimation, Multi resolution motion estimation,

Waveform based coding, Block based transform coding, Predictive coding, Application of motion estimation in Video coding.

TEXT BOOKS:

- 1.Digital Image Processing –Gonzalez and Woods, 3rdEd., Pearson.
- 2.Video Processing and Communication –Yao Wang, Joem Ostermann and Ya–quin Zhang. stEd.,PH Int.

REFERENCE BOOKS:

- 1.Digital Image Processing and Analysis-Human and Computer Vision Application with CVIP Tools – Scotte Umbaugh, 2ndEd, CRC Press, 2011.
- 2.Digital Video Processing –M. Tekalp, Prentice Hall International.
- 3.Digital Image Processing –S.Jayaraman, S.Esakkirajan, T.Veera Kumar –TMH, 2009.
- 4.Multidimensional Signal, Image and Video Processing and Coding –John Woods, 2ndEd, Elsevier.
- 5.Digital Image Processing with MATLAB and Labview –Vipula Singh, Elsevier.
- 6.Video Demystified –A Hand Book for the Digital Engineer –Keith Jack, 5thEd., Elsevier.

Course outcomes:

Upon completion of the subject student will be able to

- Understand the basic steps of image processing, pixels and image segmentation concepts.
- Familiarize Image enhancement methods such as spatial and frequency domain enhancement
- Understand the Image compression fundamentals and compression models
- Understand the basic steps of video processing and 3-D motion models
- Understand the 2-D motion estimation and coding techniques

**JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)**

B.Tech IV-YEAR I-Sem

**LT PC
3 0 0 3**

(AJ7449) BIO-MEDICAL INSTRUMENTATION

Course Objective:

- To Study the basic components of bio medical instruments and characteristics.
- To study the concepts of organization of cell and bio electrodes
- To study the mechanical activities of the heart and cardiac instrumentation.
- To study the design of Neuro muscular instrumentation of EMG, EEG.
- To study the therapeutic equipment and respiratory instrumentation.

UNIT - I:

Components of Medical Instrumentation System: Bioamplifier. Static and dynamic characteristics of medical instruments. Biosignals and characteristics. Problems encountered with measurements from human beings.

UNIT - II:

Organization of cell: Nernst equation for membrane Resting Potential Generation and Propagation of Action Potential, Conduction through nerve to neuromuscular junction.

Bio Electrodes: Biopotential Electrodes-External electrodes, Internal Electrodes, Biochemical electrodes.

UNIT - III:

Mechanical function: Electrical Conduction system of the heart. Cardiac cycle, Relation between electrical and mechanical activities of the heart.

Cardiac Instrumentation: Blood pressure and Blood flow measurement. Specification of ECG machine. Einthoven triangle, Standard 12-lead configurations, Interpretation of ECG waveform with respect to electro mechanical activity of the heart.

UNIT - IV:

Neuro-Muscular Instrumentation: Specification of EEG and EMG machines. Electrode placement for EEG and EMG recording. Interpretation of EEG and EMG.

UNIT - V:

Therapeutic equipment: Pacemaker, Defibrillator, Shortwave diathermy. Haemodialysis machine.

Respiratory Instrumentation: Mechanism of respiration, Spirometry, Pneumotachograph Ventilators.

TEXT BOOKS:

1. Hand-book of Biomedical Instrumentation – by R.S. Khandpur, McGraw-Hill, 2003.
2. Medical Instrumentation, Application and Design – by John G. Webster, John Wiley.

REFERENCES:

1. Principles of Applied Biomedical Instrumentation – by L.A. Geddes and L.E. Baker, John Wiley and Sons.
2. Biomedical Equipment Technology – Carr & Brown, Pearson.

Course Outcome:

Up on studying the subject student will be able to:

- Understand various bio-medical components and their characteristics.

- Understand the concepts of organization of cell and bio electrodes.
- Understand the mechanical activities of the heart and cardiac instrumentation.
- Understand the neuro muscular instrumentation of EMG, EEG.
- Understand the therapeutic equipment and respiratory instrumentation.

JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC AUTONOMOUS)

B.Tech IV-YEAR I-Sem

L T P C
3 0 0 3

(AJ7424) DIGITAL SIGNAL PROCESSING

Course Objectives:

1. To learn the fundamental concepts of Digital Signal Processing.
2. To explore the properties of DFT in mathematical problem solving. To illustrate FFT Calculations mathematically and develop FFT based DSP algorithms.
3. To learn the Physical realization of Digital Filters.
4. To study the Design of IIR & FIR filters mathematically.
5. To introduce DSP applications, Multirate Signal Processing.

UNIT-I :

Introduction: Introduction to Digital Signal Processing

Classification of Signals, The Representation of discrete –time signals and sequences, Block Diagram of Processing system, Signal Manipulations, Linear Time Invariant Systems, Stability, Causality, Linear constant coefficient difference equation, frequency domain representation of DTS& Signals.

UNIT-II:

Discrete Fourier Transform: Introduction, DFT and its properties, FFT algorithms

8-Point DFT using radix-2 FFT Decimation In Time, Decimation in Frequency, Linear convolution of sequences using DFT, Circular convolution of sequence using DFT, Computation of DFT :Overlap-add Method, Over-lap save Method, Relation between DTFT,DFS,DFT and Z-transform.

UNIT-III:

Realization of Digital Filters : Classification of filter on the their pole zero diagram, Realization of IIR systems by Direct form-I, Direct form-II, Cascade and Parallel. Realization of FIR systems by Direct form, cascade and linear phase system.

UNIT-IV:

Digital Filter Design Techniques: Design of IIR filter Methods IIT and BLT. Design of Butterworth and -I IIR filter. FIR filter Design :Design of FIR filter by using Different Windowing Technique. By using Frequency Sampling. Realization of system by using Frequency Sampling Technique. Comparison of IIR &FIR filters.

UNIT-V

Applications of DSP: Multirate signal processing: Decimation, Interpolation, Sampling rate conversion by a rational factor – Adaptive Filters: Introduction, Applications of adaptive filtering to equalization. Applications to Speech Processing, Radar signal Processing ,Bio-medical Instrumentation.

Text Books:

- 1.Digital signal processing-P.Ramesh Babu Second edition.
- 2.Digital signal Processing-A.Anand Kumar.

Reference Books :

1. Proakis Manolakis, ‘Digital Signal Processing : Principles, Algorithms and Applications’ Fourth 2007, Pearson Education, ISBN 81-317-1000-9.
2. Digital signal processing- Nagoor Khani, TMG,2012.
3. Emmanuel C. Ifeachor, Barrie W. Jervis, “Digital Signal Processing: A Practical Approach”, Pearson Education ISBN 0-201-59619- 9

Course Outcomes: Learner will be able to...

1. To understand the concept of DT Signal and perform signal manipulation.
2. Understand the Properties of DFT in mathematical problem solving, and FFT Algorithms.
3. Understand the Physical Realization of Digital filters.
4. Understand Design of Digital filters.
5. Understand the Multirate DSP Techniques and applications.

**JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)**

B.Tech IV-YEAR I-Sem

**L T P C
3 0 0 3**

(AJ7440) WIRELESS SENSOR NETWORKS

Course objectives:

This course will develop the knowledge in / on

- Concept of sensor networks, challenges and architectures of sensor networks
- Networking technologies and MAC protocols for wireless sensor networks
- Different routing, transport layer and security protocols in WSN
- Infrastructure establishment and security issues in WSN
- Sensor network platforms tools and applications of WSN's

UNIT I

OVERVIEW OF WIRELESS SENSOR NETWORKS:

Key definitions of sensor networks, Advantages of sensor Networks, Unique constraints and challenges, Driving Applications, Enabling Technologies for Wireless Sensor Networks.

ARCHITECTURES:

Single-Node Architecture -Hardware Components, Energy Consumption of Sensor Nodes, Operating Systems and Execution Environments, Network Architecture -Sensor Network Scenarios, Optimization Goals and Figures of Merit, Gateway Concepts.

UNIT II

NETWORKING Technologies: Physical Layer and Transceiver Design Considerations, Personal area networks (PANs), hidden and exposed node problem, Topologies of PANs, MANETs, WANETs.

MAC Protocols for Wireless Sensor Networks:

Issues in Designing a MAC protocol for Ad Hoc Wireless Networks, Design goals of a MAC Protocol for Ad Hoc Wireless Networks, Classifications of MAC Protocols, Contention -Based Protocols, and with reservation Mechanisms, Contention –Based MAC Protocols with Scheduling Mechanisms, MAC Protocols that use Directional Antennas, Other MAC Protocols.

UNIT-III

ROUTING PROTOCOLS:

Introduction, Issues in Designing a Routing Protocol for Ad Hoc Wireless Networks, Classification of Routing Protocols, Table –Driven Routing Protocols, On –Demand Routing Protocols, Hybrid Routing Protocols, Routing Protocols with Efficient Flooding Mechanisms, Hierarchical Routing Protocols, Power –Aware Routing Protocols, Proactive Routing

TRANSPORT LAYER AND SECURITY PROTOCOLS:

Introduction, Issues in Designing a Transport Layer Protocol for Ad Hoc Wireless Networks, Design Goals of a Transport Layer Protocol for Ad Hoc Wireless Networks, Classification of Transport Layer Solutions, TCP Over Ad Hoc Wireless Networks, Other Transport Layer Protocol for Ad Hoc Wireless Networks.

UNIT IV

INFRASTRUCTURE ESTABLISHMENT:

Topology Control, Clustering, Time Synchronization, Localization and Positioning, Sensor Tasking and Control.

SECURITY IN WSNs: Security in Ad Hoc Wireless Networks, Network Security Requirements, Issues and Challenges in Security Provisioning, Network Security Attacks, Key Management, Secure Routing in Ad Hoc Wireless Networks.

UNIT-V

SENSOR NETWORK PLATFORMS AND TOOLS:

Sensor Node Hardware –Berkeley Motes, Programming Challenges, Node-level software platforms, Node-level Simulators, State-centric programming.

APPLICATIONS of WSN: Ultra wide band radio communication, Wireless fidelity systems. Future directions, Home automation, smart metering Applications

TEXT BOOKS:

1. Ad Hoc Wireless Networks: Architectures and Protocols -C. Siva Ram Murthy and B.S.Manoj, 2004, PHI
2. Wireless Ad-hoc and Sensor Networks: Protocols, Performance and Control – Jagannathan Sarangapani, CRC Press
3. Holger Karl & Andreas Willig, “Protocols And Architectures for Wireless Sensor Networks”, John Wiley, 2005.

REFERENCES:

1. Kazem Sohraby, Daniel Minoli, & Taieb Znati, “Wireless Sensor Networks Technology, Protocols, and Applications”, John Wiley, 2007.

2. Feng Zhao & Leonidas J. Guibas, "Wireless Sensor Networks-An Information Processing Approach", Elsevier, 2007.
3. Ad-Hoc Mobile Wireless Networks: Protocols & Systems, C.K. Toh ,1 ed. Pearson Education.
4. Wireless Sensor Networks -C.S. Raghavendra, Krishna M. Sivalingam, 2004, Springer
5. Wireless Sensor Networks -S Anandamurugan , Lakshmi Publication

Course outcomes:

Upon completion of the subject student will be able to

- Understand the Concept of sensor networks, challenges and architectures of sensor networks
- Analyze the Networking technologies and MAC protocols for wireless sensor networks
- Understand the different routing, transport layer and security protocols in WSN
- Analyze the Infrastructure establishment and security issues in WSN
- Understand the Sensor network platforms tools and applications of WSN's

**JAYMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(AUTONOMOUS)**

(AJ5212) ELECTRICAL TECHNOLOGY

III Year B. Tech. I- Semester

**L T P C
3 0 0 3**

OBJECTIVES

- This course introduces the basic concepts and design analysis of the filters and attenuators, the Locus diagrams and Magnetic Circuits, and their use in the circuit theory.
- The emphasis of this course is laid on the basic operation of Transformers, DC machines which includes DC generators and DC motors, A.C Machines And Synchronous machines.

UNIT - I:

FILTERS AND SYMMETRICAL ATTENUATORS:

Introduction to filters, Classification of Filters, Filter Networks, Characteristic Impedance, Classification of Pass Band and Stop Band, Characteristic Impedance in the Pass and Stop bands, Constant-k Low Pass and High Pass Filters-derived T-section and π -section, Band Pass Filter and Band Elimination Filter, Illustrative problems.

Symmetrical Attenuators: T-Type Attenuator, π -Type Attenuator, Bridged T-Type Attenuator, Lattice Attenuator.

UNIT - II:

LOCUS DIAGRAMS AND MAGNETIC CIRCUITS:

Locus diagrams – Series and Parallel RL, RC, RLC circuits with variation of various parameters

Magnetic Circuits: Basic definitions, analogy between electric and magnetic circuits Magnetization characteristics of Ferro magnetic materials, self induction and mutual inductance, energy in linear magnetic systems, coils connected in series, attracting force of electromagnets.

UNIT-III:

TRANSFORMERS:

Principle of operation, Constructional details, ideal Transformer and practical Transformer, Losses, Transformer Tests, Efficiency and Regulation calculations (simple problems)

UNIT - IV:

DC MACHINES:

Principle of operation and operation of DC Generator, EMF equation, Types, Losses and Efficiency, Magnetization and Load Characteristics of DC Generators. DC Motors-Principle of operation, Types, Characteristics, Losses and Efficiency, Swinburne's Test, Speed control of DC Shunt Motor-Flux and Armature voltage control methods.

UNIT - V:

A.C MACHINES:

Three phase induction motor, principle of operation, slip and frequency, torque (simple problems).

Synchronous machines: Principles of operation, EMF equation (Simple problems on EMF). Synchronous motor principle and operation (Elementary treatment only)

TEXT BOOKS:

1. A Text book of Electrical Technology by B.L Theraja and A.K Theraja, S.Chand publications
2. Electrical Circuits - A. Chakrabarhty, Dhanipat Rai & Sons.
3. Network Analysis - N.C Jagan and C. Lakhminarayana, BS publications.
4. Basic Concepts of Electrical Engineering - PS Subramanyam, BS Publications.

REFERENCE BOOKS:

1. Engineering Circuits Analysis - William Hayt and Jack E. Kemmerly, Mc Graw Hill Company, 7th Edition.
2. Basic Electrical Engineering - S.N. Singh PUI.
3. Electrical Circuits - David A. Bell, Oxford Printing Press.

4. Principles of Electrical Engineering by V.K Mehta, Rohit Mehta, S.Chand publications.
5. Electrical Circuit Analysis - K.S. Suresh Kumar, Pearson Education.

OUTCOMES:

After going through this course the student gets a thorough knowledge on:

- Filters and attenuators
- The operation of Transformers, DC machines and AC Machines

With which he/she can able to apply the above conceptual things to real world problems and applications.

JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES (UGC-AUTONOMOUS)

III Year B.Tech. I / II-Sem

**LT PC
3 0 0 3**

(AJ_ 220)RENEWABLE ENERGY SOURCES

Pre-requisites: To learn this course student should have the concepts on the following subjects:
Engineering Physics & Chemistry

Objectives:

To make the student

1. Introduce to the technology of renewable sources of energy
2. Learn about the solar radiation, its applications and radiation measuring instruments
3. Learn about the various types of geothermal resources and its applications
4. Study the biomass energy resources , bio-mass systems
5. Learn the methods of energy extraction from the wind and oceans and learn to the technology of direct energy conversion methods

UNIT – I

PRINCIPLES OF SOLAR RADIATION: Role and potential of new and renewable source, the solar energy option, Environmental impact of solar power, physics of the sun, the solar constant, extraterrestrial and terrestrial solar radiation, solar radiation on tilted surface, instruments for measuring solar radiation and sun shine, solar radiation data for India.

UNIT-II

SOLAR ENERGY COLLECTION: Flat plate and concentrating collectors, classification of concentrating collectors, orientation and thermal analysis, advanced collectors, tracking CPC and solar swing

SOLAR ENERGY STORAGE AND APPLICATIONS: Different methods, Sensible, latent heat and stratified storage, solar ponds. Solar Applications- solar heating/cooling technique, solar distillation and drying, photovoltaic energy conversion, applications of PV system-PV hybrid systems

UNIT-III WIND ENERGY: Sources and potentials, horizontal and vertical axis windmills, performance characteristics, Betz criteria, analysis of aerodynamic forces acting on blade, applications.

BIO-MASS: Principles of Bio-Conversion, Anaerobic/aerobic digestion, types of Bio-gas digesters, gas yield, combustion characteristics of bio-gas, utilization for cooking, I.C.Engine operation and economic aspects, biomass resource development in India.

UNIT-IV

GEOTHERMAL ENERGY: Structure of earth's interior- geothermal sites- earthquakes & volcanoes- geothermal resources- hot springs-steam ejection- principle of working- types of geothermal station with schematic representation site selection for geothermal power plants-problems associated with geothermal conversion-applications-geothermal energy prospects in India.

OCEAN ENERGY: OTEC, Principles utilization, setting of OTEC plants, thermodynamic cycles. Tidal and wave energy: Potential and conversion techniques, mini-hydel power plants, and their economics.

UNIT-V DIRECT ENERGY CONVERSION: Need for DEC, Carnot cycle, limitations, principles of DEC. Thermo-electric generators, seebeck, peltier and joule Thomson effects and applications. MHD generators, principles and applications. Fuel cells, principles, and applications.

TEXT BOOKS:

1. Non-Conventional Energy Sources by G.D. Rai, Khanna Publihers, fourth edition, 2008

REFERENCE BOOKS:

1. Suhas.P.Sukhatma and Nayak.J.K., "solar Eenergy", TMH, New Delhi, 3rd edition, 2008
2. D.P.Kothari and Rakesh Ranjan and K.C. Singal., " Renewable energy resources and emerging technologies"Prentice Hall of India Pvt.Ltd., 2nd Edition, 2011
3. Non-Conventional Energy Systems / K Mittal /Wheeler

OUTCOMES:

At the end of the course, the student will be able to

1. Apply the technology to capture the energy from the renewable sources like sun, wind, ocean, biomass, geothermal.
2. Use different renewable energy sources to produce electrical power
3. Minimize the use of conventional energy sources to produce electrical energy
4. Identify the fact that the conventional energy resources are depleted

**JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)**

III Year B.Tech. I / II -Sem

**L T P C
3 0 0 3**

(AJ_221)ENERGY STORAGE SYSTEMS

Pre-requisites: To learn this course students should have the concepts on the following subjects:
Engineering Physics & Chemistry

OBJECTIVES:

1. Introduce to the technology of energy storage systems
2. Learn about the characteristics of electricity and need of ESS in various applications
3. Learn about the various types and features of ESS
4. Learn about the practical applications of ESS

UNIT-I ELECTRICAL ENERGY STORAGE TECHNOLOGIES

Characteristics of electricity, Electricity and the roles of EES, High generation cost during peak-demand periods, Need for continuous and flexible supply, Long distance between generation and consumption, Congestion in power grids, Transmission by cable.

UNIT-II NEEDS FOR ELECTRICAL ENERGY STORAGE

Emerging needs for EES, More renewable energy, less fossil fuel , Smart Grid uses, The roles of electrical energy storage technologies, The roles from the viewpoint of a utility, The roles from the viewpoint of consumers, The roles from the viewpoint of generators of renewable energy.

UNIT-III FEATURES OF ENERGY STORAGE SYSTEMS

Classification of EES systems , Mechanical storage systems, Pumped hydro storage (PHS), Compressed air energy storage (CAES), Flywheel energy storage (FES), Electrochemical storage systems , Secondary batteries , Flow batteries, Chemical energy storage , Hydrogen (H₂), Synthetic natural gas (SNG).

UNIT-IV TYPES OF ELECTRICAL ENERGY STORAGE SYSTEMS

Electrical storage systems, Double-layer capacitors (DLC) , Superconducting magnetic energy storage (SMES), Thermal storage systems , Standards for EES, Technical comparison of EES technologies.

UNIT-V APPLICATIONS

Present status of applications, Utility use (conventional power generation, grid operation & service) , Consumer use (uninterruptable power supply for large consumers), New trends in applications , Renewable energy generation, Smart Grid, Smart Micro grid, Smart House, Electric vehicles, Management and control hierarchy of storage systems, Internal configuration of battery storage systems, External connection of EES systems , Aggregating EES systems and distributed generation (Virtual Power Plant), Battery SCADA– aggregation of many dispersed batteries.

TEXT BOOKS

1. Thyristor control of Electric Drives - Vedam Subranmanyam.
2. Analysis of electric machinery and Drives systems - Paul C. Krause, Oleg wasynezuk, Scott D. Sudhoff.
3. Electrical Energy Storage Systems-ICE white papers.

REFERENCES

1. T. B. Atwater and Arthur Doble, *Metal/Air batteries*, Lindens Handbook of Batteries, 2011, ISBN 978-0-07-162421-X.
2. D. Jähnig, et al.: *Thermo-chemical storage for solar space heating in a single-family house*, 10th International Conference on Thermal Energy Storage: Ecstock 2006, 31 May - 2 June 2006, New Jersey, USA.
3. Shin-ichi INAGE: *Prospective on the Decarbonised Power Grid*, IEC/MSB/EES Workshop, Germany, 31 May - 1 June 2011.
4. P. Wolfrum, F. Steinke, C. Hoffmann: *EES Requirements for a renewable Europe*, Presentation, IEC Workshop EES, Freiburg, 31 May 2011.

COURSE OUTCOMES:

1. Apply the technology to have energy storage system for any electrical Loads
2. To save the electrical power in peak time loads using ESS
3. To store energy and to avoid the environmental pollution

**JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)**

III Year B.Tech. I / II-Sem

**L T P C
3 0 0 3**

(AJ_222) ELECTRICAL ENGINEERING MATERIALS

Objectives:

1. This course introduces conductors and semiconductors materials and types and applications.
2. Electrical properties of dielectric materials, insulators materials, types and applications. Soft and hard magnetic materials and applications.
3. Optical properties of solids and sensitive materials.

UNIT I: Conductors

Classification: High conductivity, high resistivity materials, fundamental requirements of high conductivity materials and high resistivity materials, mobility of electron in metals, commonly used high conducting materials, copper, aluminum, bronze brass, properties, characteristics, constantan, platinum, nichrome, properties, characteristics and applications, materials used for contacts.

UNIT II: Semi-Conductors

General concepts, energy bands, types of semiconductors, Fermi Dirac distribution, intrinsic Semi-conductors, extrinsic Semi-conductors, hall effect, drift, mobility, diffusion in Semiconductors, Semi-conductors and their applications, superconductors.

UNIT III: Dielectrics and Insulators

Properties of gaseous, liquid and solid dielectric, dielectric as a field medium, electric conduction in gaseous, liquid and solid dielectric, breakdown in dielectric materials, mechanical and electrical properties of dielectric materials.

Effect of temperature on dielectric materials, polarization, loss angle and dielectric loss, petroleum based insulating oils, transformer oil, capacitor oils, properties, solid electrical insulating materials, fibrous, paper boards, yarns, cloth tapes, sleeving wood, impregnation, plastics, filling and bounding materials, fibrous, film, mica, rubber, mica based materials, ceramic materials, classification of insulation (solid) and application in AC and DC machines.

UNIT IV: Magnetic Materials

Soft and hard magnetic materials, diamagnetic, paramagnetic and ferromagnetic materials, electric steel, sheet steel, cold rolled grain oriented silicon steel, hot rolled grain oriented silicon steel, hot rolled silicon steel sheet, hysteresis loop, hysteresis loss, magnetic susceptibility, coercive force, curie temperature, magneto-striction.

UNIT V: Optical Properties of Solids

Photo emission, photo emission materials, electro luminescence junction diode, photo emitters, photo transistor, photo resistors, injection lasers, optical properties of semiconductors, application of photo sensitive materials (CRT, Tube light, photo panels etc.)

Text Books:

1. "Electrical Engineering Materials", Dekker, PHI Pbs.
2. "Electrical Engineering Materials", Indulkar, S.Chand

Reference Books:

1. "Electrical Engineering Materials", Tareev
2. "Electrical Engineering Materials", Yu. Koritsky.
3. "Electrical Engineering Materials", R.K.Rajput, Laxmi Pbs.

Outcomes:

1. Apply the techniques for usage of conductors in different applications.
2. Uses of semiconductor materials in practical oriented.
3. Dielectric and insulators materials uses in AC and DC transmission lines and machines.
4. Different Magnetic materials uses in locomotives and other appliances.
5. Solids and optical properties in electrical engineering applications.

**JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)**

B.Tech. III Year II-Sem / IV Year I-Sem

L	T	P	C
3	0	0	3

(AJ_240) NEURAL NETWORKS AND FUZZY LOGIC

Pre- Requisites: To learn this course student should have the concepts on the following subject:
Power system operation and control, Computer Methods in power system

OBJECTIVES:

1. This course introduces the basics of Neural Networks and essentials of Artificial Neural Networks with Single Layer and Multi layer Feed Forward Networks.
2. Also deals with Associate Memories and introduces Fuzzy sets and Fuzzy Logic system components.
3. The Neural Network and Fuzzy Network system application to Electrical Engineering is also presented. This subject is very important and useful for doing Project Work.

UNIT-I

Introduction & Essentials to Neural Networks: Introduction, Humans and Computers, Organization of the Brain, Biological Neuron, Biological and Artificial Neuron Models, Hodgkin-Huxley Neuron Model, Integrate-and-Fire Neuron Model, Spiking Neuron Model, Characteristics of ANN, McCullochPitts Model, Historical Developments, Potential Applications of ANN. Artificial Neuron Model, Operations of Artificial Neuron, Types of Neuron Activation Function, ANN Architectures, Classification Taxonomy of ANN — Connectivity, Neural Dynamics (Activation and Synaptic), Learning Strategy (Supervised, Unsupervised, Reinforcement), Learning Rules, Types of Application

UNIT—II

Single & Multi Layer Feed Forward Neural Networks: Introduction, Perceptron Models: Discrete, Continuous and Multi-Category, Training

Algorithms: Discrete and Continuous Perceptron Networks, Perceptron Convergence theorem, Limitations of the Perceptron Model, Applications. Credit Assignment Problem, Generalized

Delta Rule, and Derivation of Back-propagation (BP) Training, Summary of Back-propagation Algorithm, Kolmogorov Theorem, Learning Difficulties and Improvements.

UNIT-III

Associative Memories-I: Paradigms of Associative Memory, Pattern Mathematics, Hebbian Learning, General Concepts of Associative Memory (Associative Matrix, Association Rules, Hamming Distance, The Linear Associate, Matrix Memories, Content Addressable Memory).

UNIT-IV

Associative Memories-II: Bidirectional Associative Memory (BAM) Architecture, BAM Training Algorithms: Storage and Recall Algorithm, BAM Energy Function, Proof of BAM Stability Theorem. Architecture of Hopfield

Network: Discrete and Continuous versions, Storage and Recall Algorithm, Stability Analysis, Capacity of the Hopfield Network Summary and Discussion of Instance/Memory Based Learning Algorithms, Applications.

UNIT – V

Fuzzy Logic: Classical & Fuzzy Sets: Introduction to classical sets – properties, Operations and relations; Fuzzy sets, Membership, Uncertainty, Operations, properties, fuzzy relations, cardinalities, membership functions.

Fuzzy Logic System Components: Fuzzification, Membership value assignment, development of rule base and decision making system, Defuzzification to crisp sets, Defuzzification methods.

Applications of ANN: Process identification, control, fault diagnosis, and load forecasting, fuzzy logic application

TEXT BOOKS

1. Neural Networks, Fuzzy logic, Genetic algorithms: synthesis and applications, Rajasekharan and Pal, PHI.
2. Neural Networks and Fuzzy Logic, C. Naga Bhaskar, G. Vijay Kumar, BS Publication-is.

REFERENCE BOOKS

1. Artificial Neural Networks, B. Yegnanarayana, PHI.
2. Artificial Neural Networks, Zaruda, PHI.

3. Neural Networks and Fuzzy Logic System, Bail Kosko, PHI.
4. Fuzzy Logic and Neural Networks, M. Amirthavalli, Scitech Publications India Pvt. Ltd.
5. Neural Networks, James A Freeman and Davis Skapura, Pearson Education.
6. Neural networks by satish Kumar, TIVIH, 2004
7. Neural Networks, Simon Hakins , Pearson Education.
8. Neural Engineering, C.Eliasmith and CH.Anderson, PHI.

OUTCOMES:

1. After going through this course the student gets a thorough knowledge on, biological neurons and artificial neurons,
2. Comparative analysis between human and computer, artificial neural network models, characteristics of ANN's, different types of activation functions, learning strategies, learning rules, perceptron models, single and multi layer feed-forward and feed—back neural networks
3. Back-propagation algorithm, Kolmogorov Theorem, different types of associative memories and basics of fuzzy logic,
4. concept of classical and fuzzy sets, fuzzy logic system components Fuzzification and Defuzzification,
5. With which he/she can able to apply the above conceptual things to real-world electrical and electronics problems and applications.

**JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)**

(AJ_511) DATABASE MANAGEMENT SYSTEMS

B.Tech III Year I/II-Sem

**L T P C
3 0 0 3**

Objectives:

This Course provides an emphasis on how to organize, maintain and retrieve information efficiently and effectively from a Database and it presents an introduction to database management systems (DBMS) and relational data model. Also the course introduces the concepts of transactions and transaction processing and the issues and techniques relating to concurrency and recovery in multi-user database environments.

UNIT-I

Database System Applications, database System VS file System, View of Data – Data Abstraction –Instances and Schemas – Data Models, Database Languages, Database Architecture, Database Users and Administrators.

Database design, ER diagrams, Beyond ER Design, Entities, Attributes and Entity sets, Relationships and Relationship sets, Additional features of ER Model, Conceptual Design with the ER Model.

UNIT-II

Introduction to the Relational Model – Integrity Constraints over Relations, Enforcing Integrity constraints, Querying relational data, Logical data base Design, Introduction to Views – Destroying/altering Tables and Views. Relational Algebra – Selection and Projection, Set Operations, Renaming, Joins, Division, Examples of Algebra Queries, Relational calculus –

Tuple relational Calculus – Domain relational calculus – Expressive Power of Algebra and calculus.

UNIT-III

Form of Basic SQL Query – Examples of Basic SQL Queries, Introduction to Nested Queries, Correlated Nested Queries, Set – Comparison Operators – Aggregate Operators, NULL values – Comparison using Null values – Logical connectives – AND, OR and NOT – Impact on SQL Constructs, Outer Joins, Disallowing NULL values, Complex Integrity Constraints in SQL Triggers and Active Data bases. Schema refinement – Problems Caused by redundancy, Decomposition – Problem related to decomposition - Reasoning about FDS - FIRST, SECOND, THIRD Normal forms – BCNF – Schema Refinement in Data base Design – Multi valued Dependencies – FOURTH Normal Form.

UNIT-IV

Transaction Concept- Transaction State- Implementation of Atomicity and Durability – Concurrent – Executions – Serializability- Recoverability – Implementation of Isolation. Lock –Based Protocols – Timestamp Based Protocols- Validation- Based Protocols. Recovery and Atomicity – Log – Based Recovery – Recovery with Concurrent Transactions – Buffer Management – Failure with loss of nonvolatile storage-Advance Recovery systems- Remote Backup systems.

UNIT-V

Data on External Storage, File Organization and Indexing – Clustered Indexes, Primary and Secondary Indexes, Index data Structures – Hash Based Indexing – Tree base Indexing, Comparison of File Organizations. Intuitions for tree Indexes, Indexed Sequential Access Methods (ISAM) B+ Trees: A Dynamic Index Structure.

TEXT BOOKS:

1. Raghurama Krishnan, Johannes Gehrke “ Data base Management Systems” TATA McGraw-Hill 3rd Edition
2. Silberschatz, Korth “Data base System Concepts” McGraw hill, V Edition.

REFERENCE BOOKS:

1. Peter Rob and Carlos Coronel “Data base Systems design, Implementation, and Management” 7th Edition.
2. Elmasri Navrate “Fundamentals of Database Systems” Pearson Education

Course outcomes:

- 1: A strong foundation in core Computer Science and Engineering, both theoretical and applied concepts.
- 2: Ability to model, understand and develop complex software for system software as well as application software.

- 3: The broad education necessary to understand the impact of Computer Science and Engineering solutions in the scientific, societal and human contexts.
- 4: A Knowledge of Contemporary Issues.

Learning outcomes:

1. Ability to understand the fundamental concepts of database management.
2. Ability to design and query databases, as well as understand the internals of databases.
3. Ability to define basic functions of DBMS & RDBMS.
4. Ability to describe database development process and to apply the Relational Database Model to understand the Logical and Physical aspects of the DBMS architecture.
5. Ability to analyze database models & entity relationship models and to draw the E-R diagram for the given case study.
6. Ability to use Structured Query Language (SQL) with complex queries.

**JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)**

(AJ_521) COMPUTER NETWORKS

III Year B. Tech. I/II Sem

**L T P C
3 0 0 3**

Objectives:

- To educate concepts, vocabulary and techniques currently used in the area of computer networks.
- To study protocols, network standards, the OSI model, IP addressing, cabling, networking components, and basic LAN design.
- To accumulate existing state-of-the-art in network protocols, architectures, and applications.
- To be familiar with contemporary issues in networking technologies

UNIT - I:

Overview of the Internet: Protocol, Layering Scenario, TCP/IP Protocol Suite: The OSI Model, Internet history standards and administration; Comparison of the OSI and TCP/IP reference model.

Physical Layer: Guided transmission media, wireless transmission media.

Data Link Layer - design issues, CRC codes, Elementary Data Link Layer Protocols, sliding window protocol

UNIT - II:

Multi Access Protocols - ALOHA, CSMA, Collision free protocols, Ethernet- Physical Layer, Ethernet Mac Sub layer, data link layer switching & use of bridges, learning bridges, spanning tree bridges, repeaters, hubs, bridges, switches, routers and gateways.

UNIT - III:

Network Layer: Network Layer Design issues, store and forward packet switching connection less and connection oriented networks-routing algorithms-optimality principle, shortest path, flooding, Distance Vector Routing, Control to Infinity Problem, Hierarchical Routing, Congestion control algorithms, admission control.

UNIT - IV:

Internetworking: Tunneling, Internetwork Routing, Packet fragmentation, IPv4, IPv6 Protocol, IP addresses, CIDR, IMCP, ARP, RARP, DHCP.

Transport Layer: Services provided to the upper layers elements of transport protocol-addressing connection establishment, connection release, Connection Release, Crash Recovery.

UNIT - V:

The Internet Transport Protocols UDP-RPC, Real Time Transport Protocols,

The Internet Transport Protocols- Introduction to TCP, The TCP Service Model, The TCP Segment Header, The Connection Establishment, The TCP Connection Release, The TCP Connection Management Modeling, The TCP Sliding Window, The TCP Congestion Control, The future of TCP.

Application Layer- Introduction, providing services, Applications layer paradigms, Client server model, Standard client-server application-HTTP, FTP, electronic mail, TELNET, DNS, SSH

TEXT BOOKS:

- 1 Data Communications and Networking - Behrouz A. Forouzan, Fifth Edition TMH, 2013.
- 2 Computer Networks - Andrew S Tanenbaum, 4th Edition, Pearson Education.

REFERENCES BOOKS:

- 1 An Engineering Approach to Computer Networks - S. Keshav, 2nd Edition, Pearson Education.
- 2 Understanding communications and Networks, 3rd Edition, W. A. Shay, Cengage Learning.
- 3 Introduction to Computer Networks and Cyber Security, Chwan-Hwa (John) Wu, J. David Irwin, CRC Press.
- 4 Computer Networks, L. L. Peterson and B. S. Davie, 4th edition, ELSEVIER.
- 5 Computer Networking: A Top-Down Approach Featuring the Internet, James F. Kurose, K. W. Ross, 3rd Edition, Pearson Education.

Outcomes:

- To understand the organization of computer networks, factors influencing computer network development and the reasons for having variety of different types of networks.
- To design a network routing for IP networks.
- To identify main internal PC components and connections.
- To explain how a collision occurs and how to solve it.
- To demonstrate proper placement of different layers of ISO model and illuminate its function.
- To learn Internet structure and can see how standard problems are solved in that context.
- To determine proper usage of the IP address, subnet mask and default gateway in a routed network.
- To understand internals of main protocols such as HTTP, FTP, SMTP, TCP, UDP, IP
- To analyze simple protocols and can independently study literature concerning computer networks.

**JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)**

(AJ_529) NETWORK SECURITY

B. Tech. III Year II Sem/ IV Year I Sem

L	T	P	C
3	0	0	3

Objectives:

This course will develop students' knowledge in/on...

- Basic concepts of security attacks, services and mechanisms
- Fundamental of cryptographic algorithms
- Authentication mechanisms and digital signature
- IP security, firewalls and various malicious software

UNIT I

Security Attacks (Interruption, Interception, Modification and Fabrication), Security Services (Confidentiality, Authentication, Integrity, Non-repudiation, access Control and Availability) and Mechanisms, A model for Internetwork security, Internet Standards and RFCs, Buffer overflow & format string vulnerabilities, TCP session hijacking, ARP attacks, route table modification, UDP hijacking, and man-in-the-middle attacks.

UNIT II

Conventional Encryption Principles, Conventional encryption algorithms, cipher block modes of operation, location of encryption devices, key distribution Approaches of Message Authentication, Secure Hash Functions and HMAC

UNIT III

Public key cryptography principles, public key cryptography algorithms, digital signatures, digital Certificates, Certificate Authority and key management Kerberos, X.509 Directory Authentication Service.

Email privacy: Pretty Good Privacy (PGP) and S/MIME.

UNIT IV

IP Security Overview, IP Security Architecture, Authentication Header, Encapsulating Security Payload, Combining Security Associations and Key Management

Web Security Requirements, Secure Socket Layer (SSL) and Transport Layer Security (TLS), Secure Electronic Transaction (SET).

UNIT V

Basic concepts of SNMP, SNMPv1 Community facility and SNMPv3. Intruders, Viruses and related threats.

Firewall Design principles, Trusted Systems. Intrusion Detection Systems.

TEXT BOOKS:

1. Network Security Essentials (Applications and Standards) by William Stallings Pearson Education.
2. Hack Proofing your network by Ryan Russell, Dan Kaminsky, Rain Forest Puppy, Joe Grand, David Ahmad, Hal Flynn Ido Dubrawsky, Steve W.Manzuik and Ryan Permech, Wiley Dreamtech

REFERENCE BOOKS:

1. Network Security and Cryptography; Bernard Menezes, CENGAGE Learning.
2. Network Security - Private Communication in a Public World by Charlie Kaufman, Radia Perlman and Mike Speciner, Pearson/PHI.
3. Cryptography and network Security, Third edition, Stallings, PHI/Pearson
4. Principles of Information Security, Whitman, Cengage Learning.

Outcomes:

Upon completion of this course, students will be able to...

- Differentiate services, attacks and mechanisms
- Apply the mathematical concepts in cryptographic algorithms
- Acquire the knowledge on key management and message authentication techniques
- Protect the data from unauthorized persons, intruders and malicious software

**JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)**

(AJ_530) CLOUD COMPUTING AND IOT

B. Tech. III Year II Sem/ IV Year I Sem

**L T P C
3 0 0 3**

Objectives:

This course will develop student's knowledge in/on...

- The concepts and fundamentals of cloud computing technology
- Various cloud models and different services offered by cloud technology developments
- Key components of cloud computing technology like cloud virtualization cloud storage and cloud platforms
- Security related issues involved in cloud computing
- To introduce the terminology, technology and its applications
- To introduce the concept of M2M (machine to machine) with necessary protocols
- To introduce the Python Scripting Language which is used in many IoT devices
- To introduce the Raspberry PI platform, that is widely used in IoT applications
- To introduce the implementation of web based services on IoT devices

UNIT-I

Introduction: Cloud computing at a glance, Historical developments, Building Cloud computing environment, Computing platforms and technologies

Principles of Parallel and Distributive Computing: Eras of computing, parallel Vs Distributive computing, Elements of parallel computing, Elements of distributive computing, Technologies for Distributive Computing.

Virtualization: Introductions, Characteristics of Virtualized environments, Taxonomy of virtualization techniques, Virtualization and Cloud computing, Pros and Cons of virtualization, Technology examples.

UNIT-II

Cloud Computing Architecture: Introduction, Cloud reference model, Types of cloud, Economics of the cloud, Open challenges.

Aneka- Cloud Application Platform: Framework Overview, Anatomy of the Aneka container, Building Aneka clouds, Cloud programming and Management.

UNIT-III

Concurrent Computing: Introducing Parallelism for Single Machine computation, Programming applications with Threads, Multi-Threading with Aneka, and Programming applications with Aneka Threads.

Data Intensive Computing: What is Data intensive computing, Technologies for Data intensive computing.

UNIT-IV

Cloud Platform in Industry: Amazon Web Services, Google App Engine, Microsoft Azure, Windows Azure Platform Appliance.

Cloud Applications: Scientific applications: ECG analysis in the cloud, Protein structure prediction, Gene Expression Data analysis for Cancer Diagnosis, Satellite image processing, Business and Consumer

Applications: CRM and ERP, Productivity, Social Networking, Media application, Multiplayer online gaming.

Advance Topics in Cloud Computing: Federated Clouds/Inter-Cloud: Characterization and Definition, Cloud Federation Stack, Aspects of interest, technologies for Cloud Federation.

UNIT-V

Introduction to Internet of Things –Definition and Characteristics of IoT, Physical Design of IoT – IoT Protocols, IoT communication models, IoT Communication APIs IoT enabled Technologies – Wireless Sensor Networks, Cloud Computing, Big data analytics, Communication protocols, Embedded Systems, IoT Levels and Templates Domain Specific IoTs – Home, City, Environment, Energy, Retail, Logistics, Agriculture, Industry, health and Lifestyle

Text Books:

1)Rajkumar Buyya, Christian Vecchiola, and Thamarai Selvi, “Mastering Cloud Computing”, *Tata McGraw Hill, First Edition*, ISBN-13: 978-1-25-902995-0, 2013.

2)Internet of Things - A Hands-on Approach, Arshdeep Bahga and Vijay Madisetti, Universities Press, 2015, ISBN: 9788173719547

Reference Books:

1)Anthony T.Velte ,Toby J Velte and Robert Elsenpeter, ”Cloud Computing A practical Approach “, *McGraw Hill, First Edition*, ISBN: 978-0-07-162695-8, 2010.

2)Barrie Sosinsky, “Cloud Computing Bible”, *Wiley Publications, First Edition*

ISBN: 978-0-470-90356-8, 2011.3)Dr.Kumar Saurabh, “Cloud Computing Insights into New-Era Infrastructure”, *Wiley India Publications, First Edition* ISBN: 978-81-265-2883-7, 2011.

3)Getting Started with Raspberry Pi, Matt Richardson & Shawn Wallace, O'Reilly (SPD), 2014, ISBN: 9789350239759

Outcomes :

Upon completion of this course, students will be able to...

- Assess the knowledge and the important role of cloud computing in the development of various applications
- Describe the of various services offered in cloud computing
- Summarize the knowledge of underlying technologies used in cloud computing
- CO4: identify the security related issues involved in cloud computing

- Explain in a concise manner how the general Internet as well as Internet of Things work.
- Understand constraints and opportunities of wireless and mobile networks for Internet of Things.
- Use basic measurement tools to determine the real-time performance of packet based networks.
- Analyse trade-offs in interconnected wireless embedded sensor networks.

**JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)**

(AJ6531)NATURAL LANGUAGE PROCESSING

B. Tech. III Year II Sem/ IV Year I Sem

L T P C
3 0 0 3

Objectives:

This course will develop students' knowledge in/on.....

- Essentials of natural language processing
- Language morphology and part of speech tagging
- Syntax parsing and semantic analysis
- Applications of natural language processing

UNIT-I

Natural Language Processing (NLP): introduction, NLP tasks in syntax, semantics, and pragmatics, Issues, Applications, The role of machine learning, Probability Basics, Information theory, N-gram Language Models, Stimating parameters and smoothing, Evaluating language models.

UNIT-II

Morphology and part of speech tagging: Linguistic essentials, Lexical syntax, Morphology and Finite state transducers, Part of speech tagging, Rule based part of speech tagging; Markov models - Hidden markov models, Transformation based models, Maximum entropy models, Conditional random fields.

UNIT-III

Syntax parsing: Syntax Parsing, Grammar formalisms and treebanks, Parsing with Context Free Grammars (CFG), Features and Unification, Statistical parsing and probabilistic CFGs, Lexicalized PCFGs.

UNIT-IV

Compositional semantics: introduction, Semantic Role Labeling and Semantic Parsing, Discourse Analysis. **Semantic analysis:** Representing meaning, Semantic analysis, Lexical semantics, Word sense disambiguation, Supervised, Dictionary based and Unsupervised Approaches.

UNIT-V

Applications: Named entity recognition and relation extraction- IE using sequence labeling- Machine Translation (MT) - Basic issues in MT-Statistical translation-word alignment-phrase-based translation – Question Answering

Text book:

1. Daniel Jurafsky and James H. Martin, "Speech and Language Processing", PrenticeHall, second edition, ISBN: 978-0131873216, 2008.

Reference books:

1. Steven Bird, Ewan Klein and Edward Loper, "Natural Language Processing with Python", O'Reilly Media, 1 edition, ISBN:978-0596516499, 2009.

2. Roland R. Hausser, “ Foundations of Computational Linguistics: Human- Computer Communication in Natural Language”, MIT Press, first edition, ISBN: 978-3540424178, 2011.

Outcomes:

Upon completion of this course, students will be able to...

- Describe the concepts of natural language processing
- Apply the lexical analysis models for morphology and part of speech tagging
- Develop the syntax and semantic parsing methods for language analysis
- Evaluate the applications based on natural language processing

**JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)**

(AJ_532) ARTIFICIAL INTELLIGENCE AND ROBOTICS

B. Tech. III Year II Sem/ IV Year I Sem

L T P C
3 0 0 3

Objectives

- To have an appreciation for and understanding of both the achievements of AI and the theory underlying those achievements. °
- To have an appreciation for the engineering issues underlying the design of AI systems. °
- To have a basic proficiency in a traditional AI language including an ability to write simple to intermediate programs and an ability to understand code written in that language.
- To acquire the knowledge on advanced algebraic tools for the description of motion.
- To develop the ability to analyze and design the motion for articulated systems

UNIT-I

Artificial Intelligence Introduction, State space search: Generate and test, Simple search, Depth First Search (DFS), Breadth First Search (DFS), Comparison and quality of solutions. Heuristic Search: Heuristic functions, Best First Search (BFS), Hill Climbing, Local Maxima, Beam search, Tabu search. Finding Optimum paths: Brute force, branch & bound, refine search, Dijkstra's algorithm, A* algorithm. Admissibility of A* algorithm.

UNIT-II

Introduction to Robotics What is a Robot? Definition, History of Robots: Control Theory, Cybernetics, Grey Walter Tortoise, Analog Electronic Circuit, Reactive Theory, Braitenberg's Vehicle, Artificial Intelligence, Vision Based Navigation, Types of Robot Control.

UNIT-III

Robot Components: Embodiment, Sensors, States, Action, Brains and Brawn, Autonomy, Arms, Legs, Wheels, Tracks, and What really drives them effectors and actuators: Effector, Actuator, Passive and Active Actuation, Types of Actuator, Motors, Degree of freedom Locomotion: Stability, Moving and Gaits, Wheels and Steering, Staying on the path. Manipulators: Endeffectors, Teleoperation, Why is manipulation hard? Sensors: Types of Sensors, Levels of Processing, Passive and Active sensors, Switches, Light sensors, Resistive position sensor.

UNIT-IV

Sonar, Lasers and Cameras: Ultrasonic and Sonar sensing, Specular Reflection, Laser Sensing, Visual Sensing, Cameras, Edge Detection, Motion Vision, Stereo Vision, Biological Vision, Vision for Robots, Feedback or Closed Loop Control: Example of Feedback Control Robot, Types of feedback control, Feed forward or Open loop control.

UNIT-V

Languages for Programming Robot: 14 Algorithm, Architecture, The many ways to make a map, What is planning, Cost of planning, Reactive systems, Action selection, Subsumption architecture, How to sequence behavior through world, hybrid control, Behavior based control and Behavior Coordination, Behavior Arbitration, Distributed mapping, Navigation and Path planning.

Textbook:

- 1.The Robotics Primer by Maja J Matarić, MIT press Cambridge, Massachusetts, London, England (2007).
- 2.A First course in Artificial Intelligence, Deepak Khemani, Tata McGraw Hill Education (India) private limited (2013)

References:

- 1.Artificial Intelligence: A Modern Approach, 3e, Stuart Jonathan Russell, Peter Norvig, Prentice Hall Publications(2010).
- 2.Artificial Intelligence Illuminated, Ben Coppin, Jones and Bartlett Publishers Inc (2004)
- 3.Artificial Intelligence A Systems Approach, M Tim Jones, Firewall media, New Delhi (2008)
- 4.Artificial Intelligence -Structures and Strategies for Complex Problem Solving., 4/e, George Lugar, Pearson Education (2002).

Outcomes:

After completing this course, students should be able to:

- Identify problems that are amenable to solution by AI methods, and which AI methods may be suited to solving a given problem.
- Formalise a given problem in the language/framework of different AI methods (e.g., as a search problem, as a constraint satisfaction problem, as a planning problem, as a Markov decision process, etc).
- Implement basic AI algorithms (e.g., standard search algorithms or dynamic programming).
- Be able to use matrix algebra and Lie algebra for computing the kinematics of robots.
- Be able to calculate the forward kinematics and inverse kinematics of serial and parallel robots.
- Be able to calculate the Jacobian for serial and parallel robot.

**(AJ7553) BIG DATA MANAGEMENT
(Professional Elective-VI)**

IV Year B. Tech. I Sem CSE

L T P C
3 0 0 3

Objectives :

This course will develop student's knowledge in/on...

- Essentials of Big data management and applications
- Data analytics and reporting
- Hadoop map reduce framework for developing Big data applications
- Big data applications capable with Hadoop distributed file system

UNIT I

Introduction:, Velocity, Variety, Veracity, and Drivers for Big Data, Sophisticated consumers, Automation, Monetization.

Big Data Analytics Applications: Social Media command center, Product knowledge hub, Infrastructure and operations studies, Product selection, Design and engineering, Location-based services, Online advertising, Risk management.

UNIT II

Architecture Components: Massively parallel processing platforms, **Unstructured Data Analytics and Reporting:** Search and count, Context-sensitive and domain-specific searches, Categories and ontology, Qualitative comparisons, Data privacy protection, Real-Time adaptive analytics and Decision engines.

Advanced Analytics Platform: Real-Time architecture for conversations, Orchestration and Synthesis using analytics engines, Entity resolution, Model management, Discovery using data at rest, Integration strategies.

UNIT III

Map-Reduce: Introduction to Map-Reduce, Physical organization of compute nodes, Map tasks, Grouping by key, Reduce tasks, Combiners, Map-Reduce execution, Coping with node failures, Map-Reduce algorithm for matrix vector multiplication, Relational algebra operations with Map-Reduce.

Hadoop Map-Reduce: Introduction, Job tracker, Task tracker, Handling child task, Worker node and Job tracker failures, YARN.

UNIT IV

Hadoop Distributed File System: Goals and motivations, Design, Reading and writing data, Managing file system metadata, Name node availability.

UNIT IV

Apache Hadoop clusters: introduction Hadoop, Versions and features, Hardware selection, cluster sizing, Operating system selection and Preparation, FIFO.

Text Books:

1. Dr. Arvind Sathi, "Big Data Analytics: Disruptive Technologies for Changing the Game", *IBM Corporation, First Edition*, ISBN: 978-1-58347-380-1, 2012.
2. Eric Sammer, "Hadoop Operations", *O'Reilley, First Edition*, ISBN: 9350239264, 2012. (Chapters 3,4,5)

Reference Books:

1. Anand Rajarama, Jure Leskovec, Jeffrey D. Ullman. "Mining of Massive Datasets", *Prime, First Edition*, ISBN-13: 978-1107015357, 2013.
2. Tom White, "Hadoop: The Definitive Guide", *O'Reilley, Third Edition*, ISBN: 9350237563, 2012.

Outcomes:

Upon completion of this course, students will be able to

- Understand advances of Big data Management and applications
- Analyze and report unstructured data
- Apply Hadoop Map reduce frame work for building Big data applications
- Design Big data applications capable of using Hadoop distributed file system

(AJ5360) MATERIAL SCIENCE

B. Tech. III Year I Sem

LTPC
3 0 0 3

Prerequisites: Brief knowledge about Physical science and its basic applications

Objectives:

1. To understand concept of atomic structure and crystal structures of materials.
2. To acquire the knowledge on Fick's law and its application.
3. To learn the concept of iron carbide diagram.
4. To understand the concepts of different advanced materials and tools.
5. To know the concepts of different material properties.

UNIT-I

Structure: Atomic structure and bonding in materials. Crystal structure of materials, crystal systems, unit cells and space lattices, determination of structures of simple crystals by x-ray diffraction, miller indices of planes and directions, packing geometry in metallic, ionic and covalent solids. Concept of amorphous, single and polycrystalline structures and their effect on properties of materials. Crystal growth techniques. Imperfections in crystalline solids and their role in influencing various properties.

Diffusion: Fick's laws and application of diffusion in sintering, doping of semiconductors and surface hardening of metals.

UNIT-II

Metals and Alloys: Solid solutions, solubility limit, phase rule, binary phase diagrams, intermediate phases, intermetallic compounds, iron-iron carbide phase diagram, heat treatment of steels, cold, hot working of metals, recovery, recrystallization and grain growth. Microstructure, properties and applications of ferrous and non-ferrous alloys. Basic fundamentals of Ceramics, polymers and composites.

UNIT-III

Advanced Materials and Tools: Smart materials, exhibiting ferroelectric, piezoelectric, optoelectric, semiconducting behavior, lasers and optical fibers, photoconductivity and superconductivity, nanomaterials, synthesis, properties and applications, biomaterials, superalloys, shape memory alloys. Materials characterization techniques such as, scanning electron microscopy, transmission electron microscopy, atomic force microscopy, scanning tunneling microscopy, atomic absorption spectroscopy, differential scanning calorimetry.

UNIT-IV

Mechanical Properties: Stress-strain diagrams of metallic, ceramic and polymeric materials, modulus of elasticity, yield strength, tensile strength, toughness, elongation, plastic deformation, viscoelasticity, hardness, impact strength, creep, fatigue, ductile and brittle fracture.

UNIT-V

Thermal Properties: Heat capacity, thermal conductivity, thermal expansion of materials.

Electronic Properties: Concept of energy band diagram for materials - conductors,

semiconductors and insulators, electrical conductivity effect of temperature on conductivity, intrinsic and extrinsic semiconductors, dielectric properties.

Optical Properties: Reflection, refraction, absorption and transmission of electromagnetic radiation in solids.

Magnetic Properties: Origin of magnetism in metallic and ceramic materials, paramagnetism, diamagnetism, antiferro magnetism, ferromagnetism, ferrimagnetism, magnetic hysteresis.

Environmental Degradation: Corrosion and oxidation of materials, prevention.

Text books:

1. Elements of Material science / V. Rahghavan
2. Material Science and Metallurgy/kodgire.

References:

1. Materials Science and engineering / William and collister.
2. Material science & material / C.D.Yesudian & harris Samuel
3. Engineering Materials and Their Applications – R. A Flinn and P K Trojan / Jaico Books
4. Essential of Materials science and engineering/ Donald R.Askeland/Thomson.
5. Material Science by O.P.Khanna. Publisher, Dhanpat Rai,

Outcomes: After completion of the course, students are able to:

1. Understand concept of atomic structure and crystal structures of materials.
2. Acquire the knowledge on Fick's law and its application.
3. Learn the concept of iron carbide diagram.
4. Understand the concepts of different advanced materials and tools.
5. Know the concepts of different material properties.

(AJ6365) STRENGTH OF MATERIALS

B. Tech. III Year II Sem

L T P C
3 0 0 3

Prerequisites: Brief knowledge about engineering mechanics.

Objectives:

1. To understand concept of simple stresses and strain.
2. To draw the SFD and BMD.
3. To learn the theory of simple bending.
4. To solve the problems on deflection of beams.
5. To learn the strain theory.

UNIT-I:

Simple stress and strain: Types of Loads, Definition of Stress, Strain, Types of stresses, strains, Stress Tensor, Strain tensor, stress strain diagrams for ductile and brittle materials, Generalized Hooke's law, relation between elastic constants, Compound bars, Thermal stresses & strains.

UNIT-II:

Shear force and bending moment: Types of supports, types of determinate beams simply supported, cantilever and overhang beams. Shear force and bending moment diagrams, principle of superposition.

UNIT-III:

Theory of simple bending: Assumption, flexure formula, bending stresses in rectangular beams
Deflections of beams: Double integration method slope and deflection for statically determinate beams.

UNIT-IV:

Torsion of circular shafts: Theory of pure torsion in solid and hollow circular shafts, Torsional shear stresses and angle of twist, transmission of power. Compound shafts, torsion of tapered shafts.

Shear stresses in beams: Flexural shear stress distribution in various shapes of cross sections of beams.

UNIT-V:

Strain theory : Strain Energy, Resistance , proof Resistance Modulus of Resistance strain energy due to gradually applied load, strain energy due to suddenly applied load , impact loading ,impact factor, strain energy due to freely falling weight , strain energy due to shear ,strain energy due to torsion ,strain energy due to bending.

Text book:

1. Strength of Materials – R.S.Khurmi and Gupta.

Reference::

1. F.P.Beer and E.R.Johnston,Jr., *Mechanics of Materials*, 2/e, McGraw-Hill,1992.
2. I.H.Shames and J.M.Pitarrew, *Introduction to Solid Mechanics*,3/e, , Prentice- Hall of India, New Delhi,
3. W.F.Riley and L.W. Zachary, *Introduction to Mechanics of Materials*, John Wiley.

Outcomes:

Student has an ability to perform various machining operations on various machine tools such as Lathe, Milling, Shaping, Slotting, Planning, Drilling, Surface Grinding and Cylindrical Grinding Tool Cutter Grinding.

(AJ5361) THERMAL SCIENCES

B. Tech. III Year I Sem

L T P C
3 0 0 3

Prerequisites: Thermal engineering, fluid mechanics, heat transfer and refrigeration and air-conditioning.

Objectives:

1. To study the energy sources in various engineering fields.
2. To study the behavior of fluids and fluid flows.
3. To study the thermal behavior.
4. To study the heat transfer in different fields.
5. To study the requirements of human comforts in refrigeration and air-conditioning

UNIT-I

Energy sources: Energy classifications - renewable and non renewable – solar energy, wind energy, tidal power, ocean power, geothermal energy, hydrogen energy and energy from biomass.

UNIT-II

Fluid mechanics: Fluid statistics: Properties of fluids- measuring instruments of fluids and its applications - Fluid kinematics: classification of fluid flows – stream lines, streak lines and stream tube – equation of continuity for one dimensional and three dimensional flows.

Fluid dynamics: surface and body forces – Euler's and Bernouli's equations for flow along a stream line. Boundary layer concepts – basics of turbo machinery - classifications of hydraulic turbines and its performances – centrifugal pumps.

UNIT-III

Thermodynamics: Fundamental concepts – Laws of thermodynamics – first law, second law, third law and its applications – gas power cycles. I.C. engines – combustion in SI and CI engines and its performances.

Compressors: classifications of compressors – reciprocating, rotary, dynamic, axial flow compressors and its working principles. Concepts on steam power cycles – boilers and boiler mountings, steam turbines, steam condensers and their working principles. Concept on gas power cycles – Air compressors, combustion chambers, gas turbines and their working principles. Jet propulsions and rockets.

UNIT-IV

Heat transfer: Modes of heat transfer and laws of heat transfer – conduction, convection, radiation heat transfer. Fourier's laws of heat conduction – steady and unsteady state heat transfer with and without heat generation - convection heat transfer – forced and free convection and its applications – significance of non-dimensional numbers. Radiation heat transfer - Introduction, absorption and reflection of radiant energy, Emission, Radiosity and irradiation. Emission characteristics and laws of black-body radiation – laws of radiations. Boiling and condensation and its classifications – concept on heat exchangers.

UNIT-IV

Refrigeration and air-conditioning: Brayton and Rankine cycles – Performance Evaluation – combined cycles, Bell- Coleman cycle, and Vapour compression cycle - performance Evaluation – vapour absorption cycle- performance evaluation.

Air-conditioning: Psychometric Properties & Processes - Requirements of human comfort and concept of effective temperature- Comfort chart –Comfort Air conditioning - Air Conditioning systems - Classification of equipment, cooling, heating humidification and dehumidification, filters, grills and registers, fans and blowers and heat pumps.

Text books:

1. Thermal Engineering / R.K. Rajput / Lakshmi Publications
2. Thermal Engineering-M.L.Marthur & Mehta/Jain bros.

References:

1. Thermal Engineering-P.L.Bellaney/ khanna publishers.
2. P.K.Nag, Heat & Mass Transfer, TMH, 2008. ISBN:0-07-047337-4
3. Holman, J.P., "Heat Transfer", Tata McGraw Hill Book Company, 1988
4. Refrigeration and Air Conditioning / CP Arora / TMH

Outcomes:

1. Obtaining the power from different types of energy sources
2. Knowing the properties of fluids and its applications.
3. Obtaining the knowledge of IC engine performance.
4. Understand laws of heat transfer and energy balance in thermal engineering systems
5. Acquire the knowledge of systematic approach in solving heat transfer problems
6. Know the requirements of human comforts in refrigeration and air-conditioning

(AJ5362) ENGINEERING MECHANICS

B. Tech. III Year I Sem

L T P C

3 0 0 3

Prerequisites: Fundamentals of mathematics and Physics

Objectives:

1. Understand the basic principles of static's applicable to rigid bodies in equilibrium
2. Apply static principles to the solution of a variety of practical problems.
3. Describe the motion of a particle in terms of its position, velocity and acceleration in different frames of references.
4. Apply work, energy, relationships for a particle in motion

UNIT – I

Introduction to Engineering Mechanics – Basic Concepts.

Resultants of Force System: Parallelogram law – Forces and components- Resultant of coplanar Concurrent Forces – Moment of Force -principle of moments – Coplanar Applications – Couples -Resultant of any Force System.

UNIT – II

Equilibrium of Force Systems : Free Body Diagrams, Equations of Equilibrium - Equilibrium of planar Systems .

UNIT – III

Kinematics of a particle: Motion of a particle – Rectilinear motion – motion curves – Rectangular components of curvilinear motion– Kinematics of Rigid Body - Types of rigid body motion -Angular motion - Fixed Axis Rotation.

UNIT-III

Kinetics of a particles: Translation -Analysis as a Particle and Analysis as a Rigid Body in Translation – Equations of plane motion - Angular motion - Fixed Axis Rotation – Rolling Bodies.

UNIT-IV

Work – energy method: Work energy Equations for Translation - Work-Energy Applications to Particle Motion – Work energy applied to Connected Systems - Work energy applied to Fixed Axis Rotation and Plane Motion. Impulse and momentum.

Text books:

1. Engg. Mechanics / S.S. Bhavikatti & K.G. Rajasekharappa / Third edition /New age International Publishers

References:

1. Engg. Mechanics / M.V. Seshagiri Rao & D Rama Durgaiiah/ Universities Press
2. Engineering Mechanics, Umesh Regl / Tayal.
3. Engg. Mechanics / KL Kumar / Tata McGraw Hill.

Outcomes:

1. Apply engineering science principles to develop algebraic relationships among key physical parameters and variables based on analysis of a specified system
2. Apply the principles of mechanics for solving practical problems related to equilibrium of rigid bodies and particle in motion
3. Apply the principles of mechanics for solving practical problems related to equilibrium of rigid bodies and particle in motion.
4. Use references that provide tabulated physical data that are useful for mechanical engineers.

(AJ7366) FINITE ELEMENT ANALYSIS

B. Tech IV Year I Sem

L T P C
3 0 0 3

Prerequisites: Tensor calculus, Strength of Materials and Basic solid mechanics, For a general Knowledge of FEM including basic to detailed discussion, I can suggest the three-volume FEM book by O C Zienkiewicz & R L Taylor.

Objectives: Upon successful completion of this course, the student will be able to:

1. Apply vector mechanics as a tool for problem solving
2. Understand the need in Design for the Finite Element Method
3. Tie his/her understanding of mechanical engineering design concepts to use the Finite Element Method software correctly and efficiently
4. Analyze a physical problem, develop experimental procedures for accurately investigating the problem, and effectively perform and document findings.
5. Understand forces associated with different parts of a machine

Unit-I

Introduction to FEM: Basic Concepts, historical background, application of FEM, General description, comparison of FEM with methods, Basic equations of elasticity, Stress-strain and strain-displacement relations. Rayleigh-Ritz method, weighted residual methods.

Unit-II

One Dimensional problems: Stiffness equations for a axial bar element in local co-ordinates using potential energy approach and virtual energy principle-properties of stiffness matrix. Finite element analysis of uniform stepped and tapered bars subjected to mechanical and thermal loads- Assembly of global stiffness matrix and load vector-Quadratic shape functions.

Unit-III

Stiffness equations for a truss bar element oriented in 2D plane-Finite element analysis of trusses- Planes truss and space truss elements-methods of assembly,

Unit-IV

Analysis of beams: Hermite shape functions-Elements stiffness matrix – Load vector-Problems
2-D Problems: CST element –Stiffness matrix and load vector-Isoparametric element representation-Shape functions- Convergence requirements-Problems

Unit-V

Two dimensional four noded isoparametric elements – numerical integration –finite element modeling of Axisymmetric solids subjected to Axisymmetric loading with triangular elements- 3-D problems. Tetrahedron elements.

Text book:

1. The Finite Element Methods in Engineering –SS Rao-Elsevier-4th Edition
2. Introduction to Finite Elements in Engineering –Tirupathi K.Chandragupta and Ashok D.Belagundu.

References:

1. Introduction of Finite Element Analysis – S.Md.Jalaludeen - Anuradha Publications
2. An introduction to Finite Element Method – JN Reddy- Mc Graw Hill
3. The Finite Element Method in engineering science –O.C. Zienkowitz, Mc. Graw Hill
4. Finite Element Methods/ Alavala/TMH
5. Concepts and application of finite element analysis-Robert Cook –Wiley.

Outcomes: Upon successful completion of this course, the student will be able to:

1. Understand the numerical methods involved in Finite Element Theory
2. Understand the role and significance of shape functions in finite element formulations and use linear, quadratic, and cubic shape functions for interpolation
3. Understand direct and formal (basic energy and weighted residual) methods for deriving finite element equations
4. Understand global, local, and natural coordinates
5. Understand the formulation of one-dimensional elements (truss and beam)
6. Understand the formulation of two-dimensional elements (triangle and quadrilateral continuum and shell elements)
7. Understand the formulation of three-dimensional elements (tetrahedral and brick elements)
8. Select appropriate space (planar (plane stress or strain), axisymmetric, or spatial), idealization (type of element), and modeling techniques
9. Perform and verify FEA using commercial FEA software
10. Recognize sources of errors in FEA This course contributes to the assessment of the following program (student) outcome: k. an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice

JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC AUTONOMOUS, AFFILIATED TO JNTUH)

(AJ7363) OPTIMIZATION TECHNIQUES AND ITS APPLICATIONS

Objective: The general objectives of the course is

1. To introduce the fundamental concepts of Optimization Techniques;
2. To make the learners aware of the importance of optimizations in real scenarios;
3. To provide the concepts of various classical and modern methods of for constrained and unconstrained problems in both single and multivariable.

Unit-I

Introduction: optimal problem formulation: Design variables- constraints-Objective function- Variable bounds. Engineering Optimization problems: classifications & some examples (Just theory & discussion): Truss structure, ammonia structure. Transit schedule and car suspension.

Unit-II

Single variable non-linear optimization problems: local minimum global minimum & inflection point. Necessary & sufficient conditions theorems, some problems based on this. Numerical methods: Exhaustive search methods: Fibonacci method, golden section method & comparison. Interpolation methods: Quadratic.

Unit-III

Multivariable unconstrained non-linear optimization problems: direct search methods: Univariate method, pattern search methods: powell, hook-jeeve's, rosen brock's search and simplex methods.

Multivariable unconstrained non-linear optimization problems: gradient methods: gradient of a function-importache-gradient direction search based methods: steepest descent/ascent method. Conjugate gradient method and variable metric method.

Unit-IV

Multivariable unconstrained non-linear optimization problems Classical optimization techniques: constraints-equations –lagrangian method-inequalities-kuhn-tucker necessary and sufficient conditions- quadratic problem-statement-wolfe's and beale's methods.

- a) Geometric programming: posynomials-arithmetic-geometric inequality-unconstrained GP-constrained GP(d" type only)
- b) Integer programming: introduction-formulation-geometric cutting plane algorithm-branch and bound method.

Unit-V

Sensitivity Analysis: linear programming – formulation-simplex method and artificial variable techniques- big-M & two-phase methods- change in the cost coefficients, coefficients & constants of the constraints, addition of variables.

- a) Simulation-definition-steps involved-types of simulation models – advantages and disadvantages – simple problems on queuing & inventory.
- b) Non-traditional optimization algorithms: genetic algorithms: working principles differences and similarities between gas and traditional methods. Simulated annealing.

Text book:

1. Engineering optimization: theory & practice-S.S rao-New age international publications-thir edition-2003.
2. Optimization for engineering design – kalyanmoy deb-prentice-hall of india Pvt.Ltd. new delhi-2005.
3. Operations research-S.D.Sharma-Kedar Nath & Ran nath Co., New Delhi.

Reference:

1. Optimization theory & practice: beveridge & Schechter. McGraw –Hill international student edition.
2. Optimization in operations research Ronald L.Rardin. Pearson education. Low price Edition.
3. Optimization theory & practice: mohan C. Hoshi & KM Moudgalya. Narosa publishing house, Chennai
4. Operations research: A.P. Verma. S.K. Kataria & sons, New Delhi-110006.

Outcomes: Upon successful completion of this course, students will be able to

1. Formulate optimization problems;
2. Understand and apply the concept of optimality criteria for various types of optimization problems.
3. Solve various constrained and unconstrained problems in single variable as well as multivariable.
4. Apply the methods of optimization in real life situation.

JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC AUTONOMOUS, AFFILIATED TO JNTUH)

(AJ6364) PROJECT PLANNING AND MANAGEMENT

Objectives:

To learn about project integration, project scope management, project time and cost management, quality management, human resource considerations, communications, risk management, and procurement management.

UNIT I

Introduction, Understanding Project Management, Defining Project Success, project management growth: concepts and definitions, organizational structures and organizing and staffing the project office and team.

UNIT II

Management functions, management of your time and stress, conflicts, special topics: Introduction, Performance Measurement ,Financial Compensation and Rewards , Critical Issues with Rewarding Project Teams, Effective Project Management in the Small Business, Organization ,Mega Projects ,Morality, Ethics, and the Corporate Culture, Professional Responsibilities, Internal Partnerships, External Partnerships, Training and Education , Integrated Product/Project Teams , Virtual Project Teams , Breakthrough Projects, Case Studies: The Trophy Project, Leadership Effectiveness (A) , Leadership Effectiveness (B), Motivational Questionnaire.

UNIT III

The variables for success: Introduction, Predicting Project Success, Project Management Effectiveness, Expectations. Working with executives: Introduction, The Project Sponsor, and Handling Disagreements with the Sponsor, The Collective Belief, The Exit Champion, The In-House Representatives.

UNIT IV

PLANNING: Introduction ,Validating the Assumptions , General Planning , Life-Cycle Phases, Proposal Preparation Kickoff Meetings , Understanding Participants' Roles , Project Planning , The Statement of Work, Project Specifications, Milestone Schedules ,Work Breakdown Structure , WBS Decomposition Problems, Role of the Executive in Project Selection ,Role of the Executive in Planning, The Planning Cycle ,Work Planning Authorization Why Do Plans Fail? , Stopping Projects, Handling Project Phase outs and Transfers, Detailed Schedules and Charts Master Production Scheduling, Project Plan, Total Project Planning, The Project Charter Management Control, The Project Manager–Line Manager Interface, Fast-Tracking, Configuration Management enterprise Project Management Methodologies, Project Audits.

UNIT V

Network scheduling techniques, project graphics: introduction, customer reporting, bar (gantt) chart, other conventional presentation techniques, logic diagrams/networks. pricing and estimating, cost control, trade-off analysis in a project environment, risk management, learning curves, contract management, quality management, modern developments project management,

the business of scope changes, the project office, managing crisis projects, the rise, fall, and resurrection of iridium: a project management perspective.

Text books:

- 1 Project Management: A Systems Approach to Planning, Scheduling, and Controlling, 10th ed. Author: Harold Kerzner, PhD.

Reference books:

- 1 Richard H. Thayer, Edward Yourdon (2000). Software Engineering Project Management (2nd ed.). Wiley-IEEE Computer Society Press. ISBN 0-8186-8000-8.
- 2 Fleming, Quentin (2005). Earned Value Project Management (Third ed.). Project Management Institute. ISBN 1-930699-89-1.
- 3 Filicetti, John, Project Planning Overview, PM Hut (Last accessed 8 November 2009).

Outcomes:

Upon satisfactory completion of the course, the learner should be able to:

1. Recognize issues in a realistic project scenario.
2. Employ work breakdown structures (WBS) in a project application.
3. Demonstrate the use of appropriate network scheduling techniques.
4. Produce a project proposal.
5. Discuss the implementation of a proposed plan.

JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES

(UGC - AUTONOMOUS, Affiliated to JNTUH)

(AJ_129) DISASTER MANAGEMENT AND MITIGATION

B. Tech. III Year I/II Sem

L T P C

3

0 0 3

Objectives:

1. To understand the disaster phenomenon, its different contextual aspects, impacts and public health consequences.
2. To learn the International Strategy for Disaster Reduction and to increase skills and abilities for implementing the Disaster Risk Reduction (DRR) Strategy.
3. To know the skills and abilities to analyze potential effects of disasters, strategies and methods to deliver public health response to avert these effects.
4. To understand the design, implement and evaluate research on disasters.

UNIT - I:

Environmental Hazards & Disasters: Meaning of Environmental hazards, Environmental Disasters and Environmental stress. Concept of Environmental Hazards, Environmental stress & Environmental Disasters. Different approaches & relation with human Ecology - Landscape Approach – Ecosystem Approach - Perception approach - Human ecology & its application in geographical researches.

UNIT - II:

Types of Environmental hazards & Disasters: Natural hazards and Disasters - Man induced hazards & Disasters - Natural Hazards - Planetary Hazards / Disasters - Extra Planetary Hazards / disasters - Planetary Hazards - Endogenous Hazards - Exogenous Hazards

UNIT - III:

Endogenous Hazards - Volcanic eruption - Earthquakes - landslides - Volcanic Hazards / Disasters - Causes and distribution of Volcanoes - Hazardous effects of volcanic eruptions - Environmental impacts of volcanic eruptions - Earthquake Hazards / disasters - Causes of Earthquakes - Distribution of earthquakes - Hazardous effects of - earthquakes - Earthquake Hazards in India - Human adjustment, perception & mitigation of earthquake.

UNIT - IV:

Exogenous hazards / disasters - Infrequent events - Cumulative atmospheric hazards / disasters

Infrequent events: Cyclones - Lightning - Hailstorms

Cyclones: Tropical cyclones & Local storms - Destruction by tropical cyclones & local storms (causes, distribution human adjustment, perception & mitigation) Cumulative atmospheric hazards/ disasters :- Floods - Droughts - Cold waves - Heat waves Floods :- Causes of floods - Flood hazards India - Flood control measures (Human adjustment, perception & mitigation) Droughts :- Impacts of droughts - Drought hazards in India - Drought control measures -

UNIT - V:

Chemical hazards / disasters: Release of toxic chemicals, nuclear explosion , Sedimentation processes: - Global Sedimentation problems - Regional Sedimentation problems - Sedimentation & Environmental problems - Corrective measures of Erosion & Sedimentation

Soil Erosion: Mechanics & forms of Soil Erosion - Factors & causes of Soil Erosion - Conservation measures of Soil Erosion.

Biological hazards / disasters: Population Explosion. Emerging approaches in Disaster Management - Three stages: Pre-disaster Stage (preparedness), Emergency Stage, Post Disaster stage – Rehabilitation Application of various technologies in Disaster risk: Geographic information systems - Remote sensing- contribution of remote sensing and GIS - Case study.

Text Books:

1. Disaster Mitigation: Experiences And Reflections by Pradeep Sahni
2. Natural Hazards & Disasters by Donald Hyndman & David Hyndman - Cengage Learning

References:

1. R. B. Singh (Ed) Environmental Geography, Heritage Publishers New Delhi, 1990
2. Savinder Singh Environmental Geography, Prayag Pustak Bhawann 1997
3. Kates, B. I & White, G. F The Environment as Hazards, oxford, New York, 1978
4. R. B. Singh (Ed) Disaster Management, Rawat Publication, New Delhi, 2000

Outcomes:

On completion of this course, students will be able to

1. Integrate knowledge and to analyze, evaluate and manage the different public health aspects of disaster events at a local and global levels, even when limited information is available.
2. Describe, analyze and evaluate the environmental, social, cultural, economic, legal and organizational aspects influencing vulnerabilities and capacities to face disasters.
3. Work theoretically and practically in the processes of disaster management (disaster risk reduction, response, and recovery) and relate their interconnections, particularly in the field of the Public Health aspects of the disasters.
4. Manage the Public Health aspects of the disasters.

JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES

(UGC-AUTONOMOUS, Affiliated to JNTUH)

(AJ_130) ENVIRONMENTAL IMPACT ASSESSMENT

B.Tech. III Year I/II-Semester

L T P C

0 0 3

3

Objectives:

1. To know the types of impact, its effect and what kind of action we need to take
2. To understand Monitoring of impact and its methodologies
3. How to predict the impact, tools & water pollution.
4. To Identify and mitigation measures of Soil & noise pollution
5. To learn identification of biological impact and other assessments of impact.

UNIT – I:

Definition of EIA, Types of EIA, Various types of environmental impacts, direct and indirect impacts, cumulative impacts, induced impacts, EIA principles, process, benefits and flaws, environmental impact statement, objectives of EIA, Environmental sustainability, identification of potential impacts, affected environment, impact prediction, impact assessment, impact mitigation, selecting the proposed action, environmental monitoring, public consultation.

UNIT – II:

Creation of EIA Data base. compilation, Environmental inventory: Baseline Data Generation, Environmental monitoring networking design (EMND), monitoring Stations, Data products and sources, impact identification methodologies, interaction-Matrix methods, use of the Leopold matrix, checklist methodologies: simple checklists, Descriptive checklists, uses of checklists, network methodologies.

UNIT – III

Meteorological data, Ambient Air quality Monitoring, Air quality standards and regulations, impact prediction, impact prediction approach, utilization of dispersion models, impact prediction tools, Impact assessment(IA): significance and assessment of the impacts, impact mitigation measures.

Impacts on water environment – Sources of pollution, Major pollutants- water quality parameters, surface water contaminants and their impacts, Existing Groundwater Quality environment – standards-prediction and assessment of impacts- mitigation measures.

UNIT – IV:

Soil pollution, causes, soil erosion, desertification, salinisation, acidification, land filling of waste, impacts on soils, conceptual approach: Identification, prediction and assessment of soil quantity-quality impacts, description of existing resources. : Identification and incorporation of mitigation measures. Impacts on noise environment: basics of noise pollution. Noise exposure forecast. Standards and guidelines. Impact prediction. Assessment of impact significance. : Identification and incorporation of mitigation measures

UNIT – V:

Status of wetlands, Threats to wetlands, Ecology impact of Assessment system: importance of biological impact Assessment, Identification prediction and assessment and significance of biological impacts, Mitigation measures, conservation of flora & fauna

Impacts and socio economic and other environment: Components considerations, human environment socio economic factors, advantages of impact assessment- assessment of impact on historical structures-Mitigation measures.

Text Books:

1. Environmental Impact Assessment, Canter, L.W., 1977, McGraw Hills, New York
2. Environmental Science and engineering, by J. Glyn and Gary W. Hein Ke- Prentice Hall publishers.

References:

1. Technological guidance manuals of EIA. MOEF, Gol.
2. Environmental Impact Assessment, 2003, Y. Anjaneyulu, B.S Publications.
3. Environmental Impact Assessment principles and applications, Erickson, P.A,
4. Environmental Impact Assessment: Theory and practice, Dr.M.Anji Reddy, BS Publications.

Outcomes:

On completion of this course, students will be able to

1. Assess Impact and its control.
2. Measure the impact and different checklist to measure the impact.
3. Know the types of prediction tools to assess the impact and prevent the water, soil & Noise pollution.
4. Predict and measure the biological impact and Historical structure impact.

JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(AUTONOMOUS-UGC, Affiliated to JNTUH)

(AJ_131) BASICS OF CIVIL ENGINEERING

B.Tech. III Year I/II-Semester

L T P C
3 0 0 3

Objectives:

1. To know the different building materials and their uses.
2. To learn the phases and techniques in building construction.
3. To understand the surveying and its applications
4. To learn about rail, road and air transportations
5. To know about Soil & Construction Management

UNIT – I:

Civil Engineering & Building Materials: Introduction to civil engineering, Natural and artificial materials & its uses , Cement and its types and uses , Cement Mortars, Concrete as Building Materials, Miscellaneous building materials.

UNIT – II:

Building Construction: Building planning, Foundations, Super structures, Dampness and its prevention, Cost effective Construction techniques.

UNIT – III:

Surveying: Introduction to Surveying, Types of surveying and its application.

UNIT – IV:

Transportation Engineering: Introduction, Advanced transportation planning and uses, Highway alignment and design, Introduction to Railway Engineering and Airport Engineering.

UNIT – V:

Soil Mechanics: Introduction to Soil Mechanics and Classification of soil, Basic definition.

Construction Management: Introduction, Planning, Scheduling and Controlling. Tools of Construction Management(WBS & PERT).

Text Books:

1. Basic Civil Engineering by S.S.Bhavikatti
2. Basics of Civil Engineering by Dr.B.C.Punmia,Ashok K.Jain,Arun K.Jain

3. Basic civil engineering by Shibu Nalpat, Nalpat Publishers
4. Building materials and construction by Arora & Bindra, Dhanput Roy Publications.

References:

1. Basics of Civil Engineering by Subhash Chander; Jain Brothers.
2. Building Construction by PC Verghese PHI
3. Building materials by Duggal, New Age Publications.
4. Text book of surveying by C. Venkataramaiah, Universities Press
5. Surveying theory and practice seventh edition by James M. and Anderson Edward M. Mikhail TATA McGraw Hill.

Outcomes:

On completion of this course, students will be able to

1. Understand about construction materials different stages of construction.
2. Know the different phases in construction.
3. Exposure about surveying.
4. Understand about Transportation and planning.
5. Understand about Soil Mechanics & Construction Management

JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC- AUTONOMOUS, Affiliated to JNTUH)

(AJ6132) QUANTITY SURVEYING & COSTING

B.Tech. III Year II-Semester

LTPC
3 0 0 3

Objectives:

1. To know the Measurements of various elements in Civil Engineering works.
2. To learn Detailed Estimate for a given building, Earthwork for Roads & Canals.
3. To understand Writing specifications, performing rate analysis and costing.
4. To prepare Valuation report for a residential building.

UNIT-I:

Measurements: General Items of Works in Building, Standard Units of measurements, Requirements of estimation, Advantages of Estimation, Working out quantities for detailed and abstract estimates-Approximate method of Estimating.

UNIT-II:

Estimate of Buildings: Detailed Estimate of Buildings ,Calculation of quantities of brick work, RCC, PCC, Plastering, White washing and Painting, Estimate of wood works for doors and frames. Preparation of detailed and abstract estimate for framed structures –RCC work, steel work including bar bending schedule.

UNIT-III:

Estimating for Earthwork: Estimate of Earthwork for Roads and Canals

UNIT-IV:

Costing: Objective of specifications, General and detailed specifications for various items of work – Earth work excavation, Lime mortar, Cement concrete, damp proof course, Form work, Brick and stone masonry, Flooring, Painting and wood work. Purpose and requirements of schedule of rates, Procedure of rate analysis.

UNIT-V:

Valuation: Objective of valuation - Definition of various terms such as market value, Book value, Assessed value, Mortgage value, Replacement value, Capital cost, Cost escalation, Sinking fund and Depreciation methods. Fixation of rent, Preparation of valuation report for residential building.

Text Books:

1. B. N. Dutta, “Estimating and Costing in Civil Engineering”, UBS Publishers, New Delhi.
2. M. Chakraborty, “Estimating, Costing, Specification and Valuation in Civil Engineering.

References:

1. D.D Kohli and R.C Kohli, “A Text Book of Estimating and Costing (Civil)”, S. Chand and Company Ltd.

Outcomes:

On completion of this course, students will be able to

1. Know types of measurements pertaining Civil Engineering works.
2. Prepare detailed estimate for building.
3. Perform rate analysis as per Schedule of Rates (SOR).
4. Prepare valuation report for a residential building.

JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES

(UGC- AUTONOMOUS, Affiliated to JNTUH)

(AJ7133) CONSTRUCTION PROJECT MANAGEMENT

B.Tech.IV Year I-Semester

L T P C

0 0 3

3

Objectives:

1. To study the Concepts of construction project management.
2. To know Project planning methods PERT & CPM
3. To learn Objectives of construction management
4. To understand Stages of pre-tendering and standard forms of contract
5. To learn Indian Contract Act, Arbitration and Conciliation Act

UNIT – I:

Quantity Surveying: Basic principles of estimating, Project cost estimation-preliminary and detailed estimation. Bill of Quantities (BOQ) and specification.

Rate Analysis: Principles of rate analysis, Direct, Indirect cost and overhead charges. Standard methods followed by government and contractors organization

UNIT – II:

Networks: Rules for networks, Numbering the events, PERT and CPM, Project duration, Calculation of floats, Time estimates, Calculation of slacks and probable completion time.

Applications in Construction Engineering: Cost Analysis and control: Direct cost, Indirect cost, Optimization of cost, Exercises in civil engineering projects, Cost control in construction project, Resource analysis- smoothening and leveling in various construction projects.

UNIT – III:

Construction Management: Introduction, Significance of construction management, Objectives and functions of construction management, Resources for construction industry, Construction team Major problems in construction industry, Functions and responsibilities of construction manager, Case studies, Future of construction management.

UNIT – IV:

Pre- Tendering and procurement: Pre-tending process and stages, Pre-Qualification of bidders, Overview of Procurement Management, Basic Steps in Procurement Process, Public

Procurement in India, E-Procurement, , Indian Contract Act 1872, Definition of Contract and its applicability.

Construction contracts: Understanding project contracts, Types of construction contracts, Standard conditions in construction contracts, Contractual documents, Conditions and specifications of contract.

UNIT – V:

Decision making in construction industry: Benefit cost analysis, replacement analysis, Break even analysis, Risk management in construction industry.

Claims and Arbitration: Indian contract act and arbitration act, Variations in work and conditions, Claims and disputes, Liquidated damages. Rights, Responsibilities and duties of client (Owner). Architect, Engineer and Contractor.

Text Books:

1. Moder, J.J., Phillips, C.R., and Davis, E.W., Project Management with CPM and PERT and precedence diagramming, C.B.S. Publishers & Distributors, New Delhi.
2. Gajaria G.T., “Laws Relating to Building and Engineering Contracts in India”, M. M. Tripathi Private Ltd.,Bombay, 1982 Tamilnadu PWD Code, 1986

References:

1. S.Seetharaman, Construction Engineering and Management, Umesh publication, New Delhi.
2. Construction planning and Management, U.K.Srivastava, Galgotia Publications Pvt Ltd
3. V. K. Raina., “Construction and Contract Management” Shroff Publishers
4. B. S Ramaswamy, ”Contracts and their Management”, LexisNexis India, 2008.

Outcomes:

On completion of this course, students will be able to

1. Identify and describe the procedure for calculating project cost
2. Knowledge in management tools CPM & PERT
3. Explain the pre-tendering stages and standard forms of contract
4. Appraise the performance of contract and contract administration
5. Expedite the importance of Contract Act, Arbitration and Conciliation Act

JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
Narsampet, Warangal-506332 (T.S)

Department of Business Management (MBA)

L T P C
3 0 0 3

(AJ _ E01) Management Science

Course Objectives:

This course is intended to familiarise the students with the framework for the managers and leaders available for understanding and making decisions relating to issues related to organisational structure, production operations, marketing, Human resource Management, product management and strategy.

UNIT - I:

Introduction to Management and Organisation: Concepts of Management and organization-nature, importance and Functions of Management, Systems Approach to Management - Taylor's Scientific Management Theory- Fayal's Principles of Management- Maslow's theory of Hierarchy of Human Needs- Douglas McGregor's Theory X and Theory Y - Hertzberg Two Factor Theory of Motivation - Leadership Styles, Social responsibilities of Management, Designing Organisational Structures: Basic concepts related to Organisation - Departmentation and Decentralisation, Types and Evaluation of mechanistic and organic structures of organisation and suitability.

UNIT - II:

Operations and Marketing Management: Principles and Types of Plant Layout-Methods of Production(Job, batch and Mass Production), Work Study - Basic procedure involved in Method Study and Work Measurement - Business Process Reengineering(BPR) - Statistical Quality Control: control charts for Variables and Attributes (simple Problems) and Acceptance Sampling, TQM, Six Sigma, Deming's contribution to quality, Objectives of Inventory control, EOQ, ABC Analysis, Purchase Procedure, Stores Management and Store Records - JIT System, Supply Chain Management, Functions of Marketing, Marketing Mix, and Marketing Strategies based on Product Life Cycle, Channels of distribution.

UNIT - III:

Human Resources Management(HRM): Concepts of HRM, HRD and Personnel Management and Industrial Relations (PMIR), HRM vs PMIR, Basic functions of HR Manager: Manpower

planning, Recruitment, Selection, Training and Development, Placement, Wage and Salary Administration, Promotion, Transfer, Separation, Performance Appraisal, Grievance Handling and Welfare Administration, Job Evaluation and Merit Rating - Capability Maturity Model (CMM) Levels - Performance Management System.

UNIT - IV:

Project Management (PERT/ CPM): Network Analysis, Programme Evaluation and Review Technique (PERT), Critical Path Method (CPM), Identifying critical path, Probability of Completing the project within given time, Project Cost Analysis, Project Crashing (simple problems).

UNIT - V:

Strategic Management and Contemporary Strategic Issues: Mission, Goals, Objectives, Policy, Strategy, Programmes, Elements of Corporate Planning Process, Environmental Scanning, Value Chain Analysis, SWOT Analysis, Steps in Strategy Formulation and Implementation, Generic Strategy alternatives. Bench Marking and Balanced Score Card as Contemporary Business Strategies.

TEXT BOOKS:

1. Stoner, Freeman, Gilbert, Management, 6th Ed, Pearson Education, New Delhi, 2004.
2. P. Vijay Kumar, N. Appa Rao and Ashnab, Chnalill, Cengage Learning India, 2012.

REFERENCE BOOKS:

1. Kotler Philip and Keller Kevin Lane: Marketing Management, Pearson, 2012.
2. Koontz and Wehrich: Essentials of Management, McGraw Hill, 2012.
3. Thomas N. Duening and John M. Ivancevich Management - Principles and Guidelines, Biztantra, 2012.
4. Kanishka Bedi, Production and Operations Management, Oxford University Press, 2012.
5. Samuel C. Certo: Modern Management, 2012.
6. Schermerhorn, Capling, Poole and Wiesner: Management, Wiley, 2012.
7. Parnell: Strategic Management, Cengage, 2012.

8. Lawrence R Jauch, R. Gupta and William F. Glueck: Business Policy and Strategic Management Science, McGraw Hill, 2012.

JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
Narsampet, Warangal-506332 (T.S)

Department of Business Management (MBA)

L	T	P	C
3	0	0	3

(AJ _ E02) MANAGERIAL ECONOMICS AND FINANCIAL ANALYSIS

Course Objective:

To enable the student to understand and appreciate, with a practical insight, the importance of certain basic issues governing the business operations namely: demand and supply, production function, cost analysis, markets, forms of business organisations, capital budgeting and financial accounting and financial analysis.

Unit I

Introduction & Demand Analysis.

Definition, Nature and Scope of Managerial Economics. Demand Analysis: Demand Determinants, Law of Demand and its exceptions. Elasticity of Demand: Definition, Types, Measurement and Significance of Elasticity of Demand. Demand Forecasting, Factors governing demand forecasting, methods of demand forecasting.

Unit II

Production & Cost Analysis: Production Function-

Isoquants and Isocosts, MRTS, Least Cost Combination of Inputs, Cobb-Douglas Production function, Laws of Returns, Internal and External Economies of Scale. Cost Analysis: Cost concepts. Break-even Analysis (BEA)-Determination of Break-Even Point (simple problems) - Managerial Significance.

Unit III

Markets & New Economic Environment:

Types of competition and Markets, Features of Perfect competition, Monopoly and Monopolistic Competition. Price-Output Determination in case of Perfect Competition and Monopoly. Pricing Objectives and Policies of Pricing. Methods of Pricing. Eursness; Features and evaluation of different forms of Business Organisation: Sole Proprietorship, Partnership, Joint Stock Company, Public Enterprises and their types, New Economic Environment Changing Business Environment in Post-liberalization scenario.

Unit IV

Capital Budgeting:

Capital and its significance, Types of Capital, Estimation of Fixed and Working capital requirements, Methods and sources of raising capital - Trading Forecast, Capital Budget, Cash Budget. Capital Budgeting: features of capital budgeting proposals, Methods of Capital Budgeting: Payback Method, Accounting Rate of Return (ARR) and Net Present Value Method (simple problems).

Unit V

Introduction to Financial Accounting & Financial Analysis:

Accounting concepts and conventions - Introduction IFRS - Double-Entry Book Keeping, Journal, Ledger, Trial Balance- Final Accounts (Trading Account, Profit and Loss Account and Balance sheet with simple adjustments).

Financial, Analysis: Analysis and Interpretation of Liquidity Ratios, Activity Ratios, and Capital structure Ratios and Profitability ratios. Du Pont Chart'

References:

1. Varshney & Maheswari: Managerial Economics, Sultan Chand' 2009.
2. S.A. Siddiqui & A.S. Siddiqui, Managerial Economics and Financial Analysis, New Age international Publishers, Hyderabad 2013'
3. M' Kasi Reddy & Saraswathi, Managerial Economics and Financial Analysis, PHI New Delhi, 2012.
4. Ambrish Gupta, Financial Accounting for Management, Pearson Education, New Delhi. 2012.

JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
Narsampet, Warangal-506332 (T.S)

Department of Business Management (MBA)

L	T	P	C
3	0	0	3

(AJ _ E03) TOTAL QUALITY MANAGEMENT

Course Objectives:

On completing this course the management students and technology students will be knowing the importance of total quality of the product and process.

UNIT-I

INTRODUCTION: The concept of TQM, Quality and Business performance, attitude and involvement of top management, communication, culture and management Systems, Management of Process Quality: Definition of quality, Quality Control.

UNIT-II

CUSTOMER FOCUS AND STATISFACTION: The importance of customer satisfaction and loyalty. Creating satisfied customers, Understanding the customer needs, Process Vs. Customer, internal customer conflict, quality focus, Customer Satisfaction, role of Marketing and Sales, Buyer – Supplier relationships.

UNIT-III

QUALITY IMPLEMENTATION: Organizing for quality implementation, making the transition from traditional a TQM organizing, Quality Circles.

UNIT-IV

THE COST OF QUALITY: Definition of the Cost of Quality, Quality Costs, Measuring Quality Costs, use of Quality Cost Information.

UNIT-V

ISO9000: University Standards of Quality: ISO around the world. The ISO9000 ANSI/ASQCQ-90, Series Standards, benefit of ISO9000 certification, the third party audit.

REFERENCES:

1. Total Quality Management/ Joel E.Ross/ Taylor and Franscis Limited.
2. Total Quality Management / P.N.Mukherjee/ PHI
3. Beyond TQM/ Robert L. Flood
4. Statistical Quality Control / E.L.Grant/ Mc Graw Hill
5. Total Quality Management – A Practical Approach / H.Lal
6. Quality Management / Kanishka Bedi/ Kanishka Bedi/Oxford University Press/2011
7. Total Engineering Quality Management / Sunil Sharma / Macmillan

JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
Narsampet, Warangal-506332 (T.S)

Department of Business Management (MBA)

L	T	P	C
3	0	0	3

(AJ _ E04) Global Marketing

Course Objective:

The objective of the course is to provide students with a perspective of International Marketing Management, its environment and complexities. The prerequisite for the course is Marketing Management taught in II semester.

Unit -1:International Marketing: Scope and Significance of International Marketing, the strategic importance of International marketing, Differences between international and domestic marketing. Need for international trade, trends in foreign trade. International market environment - Business Customs in International Market.

Unit -2:Canalising and targeting international market opportunities: regional market Characteristics, Marketing in transitional economies and third world countries, international market segmentation and targeting. International Market Entry Strategies:

Indirect Exporting, Domestic Purchasing, Direct Exporting, Foreign Manufacturing, Foreign Manufacturing Strategies Without Investment, Foreign Manufacturing Strategies With Direct Investment. Entry Strategies of Indian Firms.

Unit -3:International product management:

International product positioning, Product saturation Levels in global Market, International product life cycle, Geographic Expansion– Strategic Alternatives. New products in Intentional Marketing, Product and culture, brands in International Market.

Unit -4:International Marketing Channels: channels –Distribution Structures, Distribution Patterns, Factors effecting Choice of Channels, the Challenges in Managing An international Distribution Strategy Selecting Foreign Country Market intermediaries. The management of physical distribution of goods.

Unit -5:Pricing and Promotion for international Markets: Environmental influences on Pricing Decisions , Grey Market goods, Transfer pricing, Global Pricing – Policy

Alternatives. Global Advertising and brandy, selecting an advertising agency. Personal selling, Sales Promotion, Public Relations and Publicity, Sponsorship Promotion. Export Policy Decisions of a firm, EXIM policy of India. Export costing and pricing, Export procedures and export documentation. Export assistance and incentives in India

References

1. Philip R. Cateora, John L. Graham: International Marketing, Tata McGraw-Hill Co. Ltd., 2009.
2. Mathur: International Marketing, Sage, 2009
3. Roger Bennett & Jim Blythe: International Marketing Strategy Planning Market Entry & Implementation, Kogan, 2009.
4. Francis Cherunillum: International Marketing, Himalaya, 2009. Vasudeva: International Marketing, Excel,2009.
5. Sak Onkvisit, John J. Shaw: International Marketing Analysis and Strategy, 3/e, Pearson, 2009.
6. Isobel Doole and Robin Lowe: International Marketing Strategy, 2/e, Cengage, 2009.
7. Subhash C. Jain: International Marketing, Cengage, 2009.
8. Keegan: Global marketing Management, Pearson, 2009.
9. Michael Czinketa: International Marketing 8/e, Cengage, 2009

JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
Narsampet, Warangal-506332 (T.S)

Department of Business Management (MBA)

L	T	P	C
3	0	0	3

(AJ _ E05) GREEN MARKETING

Course Objectives

The student must be able to understand that simple marketing of the product is not only important but in long run the welfare of the customer is also essential. For that purpose healthy and unadulterated products must be placed in the hands of the consumers. Thus Green marketing practices have become as an essential component of an organization's viability and sustainability. The tech-savvy students must have the knowledge of the importance of green marketing. The course is meant to make the tech students to be aware of this age-old but forgotten concept of clean environment and fine health.

UNIT: I

CONCEPT OF MARKETING: Concept and definition of marketing – Difference between marketing and sales – Marketing Mix – Management of 4 Ps including the 5th P – Market segmentation and Strategies – Management of Product Mix and Promotion mix.

UNIT: II

GREEN MARKETING: Meaning of Green Marketing – Origin of Green Marketing- Importance from the perspectives of consumer, businesses and other stakeholders – Planning, development and implementation of green marketing strategies – Ethics and Social Responsibility for green marketing.

UNIT: III

ENVIRONMENT AND CONSUMPTION: Interaction between environment and consumption – Human influences on climate change, atmosphere, water, land and biodiversity – Strategies to reduce the adverse effects of production and consumption – Influence of power consumption on households and business firms.

UNIT: IV

DISCOVERING THE VALUE OF GREEN MARKETING: Green Market segmentation, target marketing, and market position – Integrated green marketing communications – message strategy, green branding, certification labeling and demarketing.

UNIT: V

GREEN MARKETING INNOVATIONS: Green Marketing product and process – Innovation, idea generation, product development, test marketing – Green Marketing adoption-The role of supply cycles and logistic needs – Sustainable logistics ISO 14000 – Pricing of green products: supply and demand – Legal constraints.

References:

1. Boush, David, Friestad, Marian and Wright, Peter; Deception in the Marketplace: The Psychology of Deceptive Persuasion and Consumer Self-protection, Psychology Press (2009)
2. Esty, Daniel and Andrew Winston; Green to Gold: How Smart Companies Use Environmental Strategy to Innovate, Create Value, and Build competitive Advantage, John Wiley & Sons, New Jersey (2009)
3. Grant, John; The Green Marketing Manifesto, John Wiley & Sons, New Jersey (2007)
4. Peattie, Ken;” Towards Sustainability: The Third Age of Green Marketing”, Marketing Review, 2 (2), 129-146.
5. Sassatelli, Roberta; Consumer Culture: History, Theory and Politics, London, Sage, (2007)

JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
Narsampet, Warangal-506332 (T.S)

Department of Business Management (MBA)

L	T	P	C
3	0	0	3

(AJ _ E06) INTELLECTUAL PROPERTY RIGHTS

Course Objectives:

In the interest of the national economic growth the innovations and improvements are to be owned and used for the production and distribution process. The students of technology will be benefited by knowing the process of obtaining recognition of their innovations. This course will enable them to know the legal process of registering the innovations.

UNIT – I

INTRODUCTION TO INTELLECTUAL PROPERTY: Introduction, types of intellectual property, International organizations, agencies and treaties, importance of intellectual property rights.

UNIT – II

TRADE MARKS: Purpose and function of trade marks, acquisition of trade mark rights, protectable matter, selecting and evaluating trade mark, trade marks registration processes.

UNIT – III

LAW OF COPY RIGHTS: Fundamental of copy right law, originally of material, rights of reproduction, rights of perform the work publicity, copy right ownership issues, copy right registration, notice of copy right, international copy right law.

LAW OF PATENTS: Foundation of patent law, patent searching process ownership rights and transfer.

UNIT- IV

TRADE SECRETS: Trade secrete law, determination of trade secrete status, liability for misappropriations of trade secrets, protection for submission trade secrete litigation.

UNIT-V

NEW DEVELOPMENT OF INTELLECTUAL PROPERTY: New developments in trade mark law: Copy right law, patent law, intellectual property audits.

TEXT BOOOKS & REFERENCES:

1. Intellectual property rights, Deborah, E. Bouchux, cengage learing
2. Intellectual property right – Unleashing the knowledge economy, prabuddha ganguli, Tate Mc Graw Hill Publishing company ltd

JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES Narsampet, Warangal-506332 (T.S)

Department of Business Management (MBA)

L	T	P	C
3	0	0	3

(AJ _ E07) SUPPLY CHAIN MANAGEMENT

Course Objectives

The primary aim of this Course is to impart the technology students about the ways and means of connecting the production operations with distribution of goods and services to the end user. On finishing this course, he will be able to know the functioning of the links in the chain of distribution points and their management.

UNIT: I

INTRODUCTION TO SUPPLY CHAIN MANAGEMENT: Meaning and definition of Supply Chain Management (SCM) – Importance of SCM – Overview of SCM - Key decision areas – Meaning and definition of logistics – External drivers of change. Dimensions of logistics – Logistic system analysis.

UNIT: II

SOURCING AND PRICING DECISIONS: Sourcing strategy: Manufacturing management – Make or buy decision – Materials Management - Choice of sources – Procurement planning. – Capacity Management.

UNIT: III

DISTRIBUTION STRATEGY: Choice of Market – Network design – Warehoiuse designed operation and distribution planning – Transportation – Packaging- Methods of packing.

UNIT: IV

INVENTORY STRATEGY: Meaning of inventory- Demand forecasting – Inventory Planning – Planning of stocking facilities – Inventory Control: methods of control – Warehouse location allocation – Warehouse design and operations – Inventory norms – Methods of inventory issue pricing.

UNIT: V

CHANNELS OF DISTRIBUTION: Different channels of distribution – Channel selection – Channel Management - Customer service strategy: Identification of service needs, cost of services – Revenue Management.

References:

1. B. S. Sahay; Supply Chain Management, 2nd Edition, Mac Millan Inddia, (2004)
2. K. Sridhara Bhatt; Essentials of logistics and Supply Chain Management, 1st Ed. Himalaya Publishing House, (2007)
3. Sunil Chopra, Peter Meindle; Supply Chain Management, 3rd Edn. PHI, (2007)
4. Donald J. Bowersox, David J. Closs; Logistic Management, International Edition, Tata MacGraw Hill Publishing Ltd., (2004)

**JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
Narsampet, Warangal-506332 (T.S)**

Department of Business Management (MBA)

L T P C
3 0 0 3

(AJ _ E08) STATISTICAL QUALITY CONTROL

Course Objectives:

This course has been designed for both graduate and undergraduate students of technology for various branches of engineering. The focus of this course is on both applications and theory. Modern statistical methods will be used for quality control and improvement. On the completion of the course the tech student is expected to understand the methods of ensuring quality of product and process.

UNIT: I

INTROUCTION TO QUALITY CONROL: Meaning of Quality and Quality Improvement; Brief History of Quality Methodology; Statistical Methods for Quality Control and Improvement; Total Quality Management (quality philosophy, links between quality and productivity, quality costs legal aspects of quality implementing quality improvement).

UNIT: II

PROCESS QUALITY: Product and Process quality - Modeling Process Quality – Review of all methods of process control - Frequency distribution and histogram, numerical and graphical descriptive statistics, some important discrete and continuous probability models; some useful approximations.

UNIT: III

STATISTICAL PROCESS CONTROL: Methods of Statistical Process Control: Chance and assignable causes, Statistical Basis of the Control Charts (basic principles, choices of control limits, sample size and sampling frequency, rational subgroups, analysis of pattern on control charts, warning limits, ARL, sensitizing rules for control charts.

UNIT: IV

CONTROL CHARTS: Control Charts For Attributes,: Control Chart for Fraction Nonconforming (OC curve of the control chart, variable sample size, non-manufacturing application, the OC function and ARL calculation); Control Charts for Nonconformities or Defects; Choices Between Attribute and Variable Control Charts, Guideline for Implementing Control charts.

UNIT: V

CAPACITY ANALYSIS: Process and Measurement system Capability Analysis (PCA), Analysis using a histogram or a probability plot, process-capability ratios, confidence interval for process-capability ratio, PCA using a control chart, estimating natural tolerance limits of a process.

References:

1. E.L. Grant and R.S. Leavenworth, Statistical Quality Control, 6th edition, McGraw- Hill publisher.
2. Jerry Banks, Principles of Quality Control, Wiley publisher.
3. D. C. Montgomery, Introduction to Statistical Quality Control, 4th edition 2001, Wiley publisher

JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
Narsampet, Warangal-506332 (T.S)

Department of Business Management (MBA)

L	T	P	C
3	0	0	3

(AJ _ E09) FINANCIAL STATEMENT ANALYSIS AND REPORTING

Course Objectives:

The main purpose of the course is to make the students to understand the environment in which financial reporting choices are made. After completing the course the student will be able to use the financial data for taking various decisions like investment, production and dividend distribution. The course will make the executives for preparing financial statements, so as to enable the lenders, equity analysts, investment bankers, boards of directors, and others to assess the corporate performance and the behavior of management.

UNIT: I

FINANCIAL STATEMENTS: Meaning and definition of financial statements – Purpose and uses of financial statements. Types of financial statements – Accounting Cycle- Place of Components of financial statements: Income Statement and Balance Sheet –

UNIT: II

ORGANIZATION OF INFORMATION IN FINANCIAL STATEMENTS: Meaning of Revenue and capital expenses – Distinction between Revenue and Capital expenditure. Classification of Assets - System of Accounting: cash basis and accrual basis - merits of each system - Sustainable Earnings: Meaning of recurring and non-recurring earnings - Operating and non-operating incomes and expenses . Revenue recognition.

UNIT: III

FLOW STATEMENTS: Meaning and purpose of Flow statements – Types of flow statements – Fund Flow Statement: Meaning, purpose and items in Fund Flow Statement –

Cash Flow Statement: Meaning, purpose and items in cash flow statements – Distinction between Fund Flow and Cash Flow Statements – Relationship of these flow statements with Income Statements and Balance sheet.

UNIT: IV

TOOLS OF ANALYSIS: Meaning and need for analysis of accounting data – Types of Analysis of Financial Statements – Comparative Statements: Meaning and purpose – Common Size Statement: Meaning and purpose – Ratio Analysis: meaning, purpose and types of Ratios –Operating ratios, Debt-equity ratios, profitability ratios, turnover ratios and liquidity ratios (problems)

UNIT: V

FINANCIAL REPORTING: Meaning and objectives of Reporting – Internal and external reporting, difference between external and internal – purpose of internal reporting and external reporting - Reporting for tax purposes, Income Tax and Sales Tax – Reporting as per the Companies Act, Banking Regulation Act and other Corporate bodies.

Reference Books:

1. Gokul Sinha, Financial Statement Analysis; 2nd Edition, Jain Book Agency (2012)
2. Jagadish R. Raiyani, Financial Ratios and Financial Statement Analysis (2011)
3. Gerald I. White and Ashwinipaul C. Sondhi; The Analysis and Use of Financial Statements , (2007)
4. George Foster; Financial Statement Analysis; 2nd Edition (Reprint), McGraw Hill, (2007)

JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
Narsampet, Warangal-506332 (T.S)

Department of Business Management (MBA)

L	T	P	C
3	0	0	3

(AJ _ E10) MICRO, SMALL AND MEDIUM ENTERPRISES MANAGEMENT

Course Objectives

The students of Technology ultimately become a technocrat who are expected to have the knowledge of establishing a Start-up. This course will enable them to know the basics like process and procedure to set up a small enterprise which over a time may culminate into a large enterprise.

Unit I:

Introduction for Small and Medium Entrepreneurship (SME): Concept & Definition, Role of Business in the modern Indian Economy, History of SMEs in India, Employment and export opportunities in MSMEs.

Unit II:

Setting of SMEs': Location of Enterprise – steps in setting – problems of entrepreneurs – sickness in SMI – Reasons and remedies – Incentives and subsidies – Evaluating entrepreneurial performance – Rural entrepreneurship – Women entrepreneurship.

Unit III:

Project Finance: Source of finance – Institutional finance – Role of IFC, IDBI, ICICI, LIC, SFC, SIPCOT and Commercial Bank – Appraisal of Bank for loans. Institutional aids for entrepreneurship development – Role of DST, SIDCO, NSICS, IRCI, NIDC, SIDBI, SISI, SIPCOT, Entrepreneurial guidance bureau – Approaching Institutions for assistance.

Unit IV:

Management of MSE: Management of Product Line; - Communication with clients; - Credit Monitoring System - Management of NPAs - Restructuring, Revival and Rehabilitation of SME

Unit V:

MSME Policies and Emerging Trends in SMEs:

Central Government policies SME - and export promotion policy - the MSME development act, 2006. - Institutional Support mechanism in India.

Reference Books:

1. Small Business Entrepreneurship: Paul Burns & Jim Dew hunt, palgrave macmillan publishers.2010 edition.
2. Micro, Small & Medium Enterprises Development Act, 2006 (Law, Policies & Incentives) Abha
3. Jaiswal, 2010, Jain book agency.
4. "Financing Micro, Small & Medium Enterprises 1st Edition" is written by K. Sudarsan. This book was published in the year 2010. This book has total of pp. xxii + 445 (Pages). The publisher of this title is Associated Publishers
5. Project Finance in Theory and Practice: Designing, Structuring, and Financing Private and Public
6. Projects Stefano Gatti, Academic Press, 07-Nov-2007 - Business & Economics - 440 pages
7. Micro Small and Medium Enterprises in India Hardcover – 2013 by Suman Kalyan
8. Chaudhury (Author) Publisher: Raj Publications (2013)
9. “Small and medium enterprises in transitional economies”, challenges and opportunities, by Aneet Monika Agarwal, Published by DEEP and DEEP pvt Ltd.